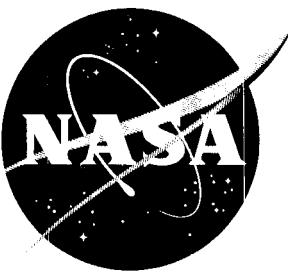


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# TECHNICAL MEMORANDUM

## X-336

PRESSURE DISTRIBUTION ON TWO MODELS OF A PROJECT MERCURY  
CAPSULE FOR A MACH NUMBER RANGE OF 1.60 TO 6.01 AND  
AN ANGLE-OF-ATTACK RANGE OF 0° TO 180°

By Robert A. Newlander, Nancy L. Taylor,  
and E. Brian Pritchard

Langley Research Center  
Langley Field, Va.

CLASSIFICATION CHANGES TO DECLASSIFIED  
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

TECHNICAL MEMORANDUM X-336

PRESSURE DISTRIBUTION ON TWO MODELS OF A PROJECT MERCURY  
CAPSULE FOR A MACH NUMBER RANGE OF 1.60 TO 6.01 AND  
AN ANGLE-OF-ATTACK RANGE OF 0° TO 180°\*

By Robert A. Newlander, Nancy L. Taylor,  
and E. Brian Pritchard

SUMMARY

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The complete pressure distribution on a 1/9-scale model of the Project Mercury capsule was determined for a Mach number range of 1.60 to 4.65, Reynolds numbers from  $2.05 \times 10^6$  to  $2.68 \times 10^6$ , and an angle-of-attack range from 0° to 180°. A 1/14.9-scale model was tested at a Mach number of 6.01, a Reynolds number of  $2.52 \times 10^6$ , and an angle-of-attack range from 0° to 30°. Newtonian theory for the prediction of pressure coefficients on a spherical body was found to be applicable to the ablation shield for the reentry configuration.

## INTRODUCTION

The primary object of Project Mercury is manned orbital flight and reentry into the earth's atmosphere. The Mercury capsule will be the payload package on the final stage of a missile, and therefore minimum weight is a primary consideration. The prerequisite of structural strength with minimum weight necessitates definition of load distribution over the entire capsule. This paper presents experimentally obtained local pressure coefficients on two models of the Mercury capsule.

For this investigation, a 1/9-scale model of the Mercury capsule was tested in the Langley Unitary Plan wind tunnel at Mach numbers from 1.60 to 4.65 and Reynolds numbers from  $2.05 \times 10^6$  to  $2.68 \times 10^6$ . The exit and reentry configurations were tested through an angle-of-attack range from 0° to 180° and the exit configuration with escape system was tested through an angle-of-attack range of 25°. Also, a 1/14.9-scale

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model of the Mercury capsule was tested in the Langley 20-inch hypersonic tunnel. This model was tested in the reentry configuration only for an angle-of-attack range of  $0^\circ$  to  $30^\circ$  at a Reynolds number of  $2.52 \times 10^6$  and a Mach number of 6.01.

The results of a force program previously conducted in the Langley Unitary Plan wind tunnel at approximately the same test conditions as the present investigation are presented in reference 1.

#### SYMBOLS

$C_p$	pressure coefficient based on free-stream conditions, $\frac{p_l - p_\infty}{q_\infty}$
M	Mach number
$p_l$	local pressure, psf
$p_\infty$	free-stream pressure, psf
$q_\infty$	free-stream dynamic pressure, psf
R	Reynolds number based on maximum diameter
r	radial distance from line of symmetry of capsule, in.
$T_t$	free-stream stagnation temperature, $^{\circ}\text{F}$
x	longitudinal distance measured from termination of hemispherical ablation shield, in. (fig. 1)
$\alpha$	angle of attack measured between relative wind and body center line ( $0^\circ$ with capsule in reentry attitude), deg (fig. 1)
$\phi$	meridian angle about capsule, deg (fig. 1)
$\theta$	acute angle described by tangent line to sphere and flow direction (complement of Newtonian pressure angle), deg (fig. 1)

#### DESCRIPTION OF MODEL

The 1/9-scale model of the Mercury capsule shown in figure 2 with escape tower on and off was constructed of stainless steel. This model

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was instrumented with 56 pressure orifices located at 9 meridian angles and 12 axial stations. The location of each pressure orifice is shown in figure 3. Photographs of the 1/9-scale model with the various sting arrangements used to obtain the complete angle-of-attack range of  $180^\circ$  are shown in figure 4.

The 1/14.9-scale model of the Mercury capsule shown in figure 5 was constructed of aluminum. The instrumentation consisted of nine pressure orifices located at two meridian angles and eight axial stations. The angle-of-attack range of  $30^\circ$  was obtained using the model support system shown in figure 6. This model was oriented in roll angles of  $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$ , and  $180^\circ$  in order to provide the pressure distribution over the entire model.

#### APPARATUS AND TEST CONDITIONS

This investigation was conducted in both the low and high Mach number test sections of the Langley Unitary Plan wind tunnel (ref. 2) and in the Langley 20-inch hypersonic tunnel (ref. 3). Both test sections of the Unitary Plan wind tunnel have asymmetrical sliding-block nozzles which permit a continuous variation in test-section Mach number from 1.5 to 2.9 in the low Mach number test section and from 2.30 to 4.65 in the high Mach number test section. The 20-inch hypersonic tunnel is of the fixed-nozzle, blowdown type.

The test conditions for which the pressure coefficients were obtained are as follows:

M	R	$q_\infty$ , psf	$T_t$ , $^{\circ}\text{F}$	$\alpha$ , deg	
				Exit and reentry	Escape
1.60	$2.68 \times 10^6$	911	125	0 to 180	155 to 180
2.00	2.50	875	125	0 to 180	155 to 180
2.85	2.38	532	150	0 to 180	155 to 180
3.94	2.20	369	150	0 to 180	155 to 180
4.65	2.05	263	150	0 to 180	155 to 180
6.01	2.52	719	400	0 to 30	

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#### INSTRUMENTATION AND ACCURACY

Pressure measurements on the 1/9-scale model were made by connecting the orifices to valves which sample 48 pressures in sequence on a single transducer. The transducer output is recorded on digitized self-balancing potentiometers for machine calculation. The free-stream and stagnation pressures were measured on precision mercury manometers accurate to within 0.5 psf. The accuracy of the electrical transducer is 0.5 percent of the full-scale deflection which is the only major factor affecting the accuracy of the pressure measurements. In order to obtain the most accurate pressure measurements, both 5-psi and 15-psi electrical transducers were used in the test of the 1/9-scale model. The areas covered by these two ranges of electrical transducers are illustrated in figure 7. Individual 15-psi, 1-psi, and 2-psi transducers were used for each pressure orifice to obtain results on the 1/14.9-scale model. The 15-psi transducers were used to measure the hemispherical-nose pressures, the 1-psi transducers were used for the conical-afterbody pressures, and the 2-psi transducers were used for the cylindrical-afterbody pressures.

The maximum errors of the pressure coefficients and errors in Mach number are presented in the following table for each test Mach number:

M	$\pm\Delta M$	$\pm\Delta C_p$			
		1 psi	2 psi	5 psi	15 psi
1.60	0.02			0.0040	0.0119
2.00	.02			.0041	.0123
2.85	.02			.0068	.0203
3.94	.06			.0098	.0293
4.65	.05			.0137	.0411
6.01	.02	0.0019	0.0039		.0292

Angles of attack have not been corrected for load deflections; however, this effect was not significant.

#### PRESENTATION OF RESULTS

Schlieren photographs were obtained throughout the Mach number and angle-of-attack ranges for the 1/9-scale model. Figure 8 presents typical photographs of the exit and reentry configurations and figure 9 presents typical photographs of the escape configurations. Pressure

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coefficients measured on the exit and reentry configurations of the 1/9-scale model are presented in tables I(a) to I(e). Pressure coefficients measured on the reentry configuration of the 1/14.9-scale model are presented in table I(f). Pressure coefficients measured on the escape configuration of the 1/9-scale model are presented in table II. Basic results of the investigation are presented in figures 10 to 15 as follows:

Figure

Comparison of measured pressure coefficient with Newtonian theory on ablation shield for reentry configurations of the 1/9-scale model and the 1/14.9-scale model . . . . .	10
Variation of pressure coefficient with angle of attack for typical orifices of the 1/9-scale model through the complete angle-of-attack range . . . . .	11
Effect of angle of attack on the pressure distribution on exit and reentry configurations of the 1/9-scale model at meridian angles of $0^\circ$ and $180^\circ$ . . . . .	12
Effect of Mach number on the pressure distribution on escape configuration of the 1/9-scale model at meridian angles of $0^\circ$ and $180^\circ$ for $\alpha = 180^\circ$ . . . . .	13
Effect of angle of attack on the pressure distribution on exit and reentry configurations of the 1/9-scale model at axial stations of 4.51, 6.93, and 9.59 inches . . . . .	14
Effect of Mach number on the pressure distribution on escape configuration of the 1/9-scale model at axial stations of 4.51 and 6.93 inches for $\alpha = 180^\circ$ . . . . .	15

DISCUSSION

The result obtained from the Newtonian theory for the prediction of pressure coefficients on a spherical body has been compared with the measured pressure coefficients on the hemispherical ablation shield of the reentry configuration as shown in figure 10. The pressure coefficient for each orifice located on the vertical center plane on the hemispherical ablation shield was plotted against the complement of the Newtonian pressure angle as the model moved through an angle-of-attack range of  $25^\circ$ . The inability of the flow at the edge of the ablation shield to remain attached results in a deviation from spherical flow, and consequently a lower pressure coefficient is obtained for those orifices located near the shoulder of the capsule. The best agreement between Newtonian theory and the measured data occurs at the stagnation point on the hemispherical ablation shield. As the distance from the stagnation point increases, the deviation of measured pressure coefficient from Newtonian theory decreases. Several other theories were

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applied to the afterbody of the capsule but were found to give poor agreement with measured data. Figure 11 shows the pressure coefficients obtained at typical pressure orifices as the 1/9-scale model moved through an angle-of-attack range of 180°. One of the problems connected with Project Mercury is determining a location for a pressure-sensing device for the release of the drogue parachute. This device would be located at a point on the body where the pressure is independent of model orientation. In figure 11 it is shown that with the exception of a Mach number of 1.60, the pressure coefficients obtained at orifice 46 remain relatively constant through an angle-of-attack range from 0° to 40° and the pressure coefficients obtained at orifice 37 remain relatively constant through the entire angle-of-attack range; although, it must be noted that other gyrations that include roll and yaw produce pressure variation as indicated in the tables.

#### SUMMARY OF RESULTS

The pressure distribution was determined on two models of a Project Mercury capsule at Mach numbers from 1.60 to 6.01 and Reynolds numbers from  $2.05 \times 10^6$  to  $2.68 \times 10^6$ . The 1/9-scale model was tested in the exit and reentry configurations through an angle-of-attack range from 0° to 180° and in the exit configuration with escape system through an angle-of-attack range of 25°. The 1/14.9-scale model was tested in the reentry configuration through an angle-of-attack range from 0° to 30°. The pressure distribution on the ablation shield for the reentry configuration could be predicted by Newtonian theory.

Langley Research Center,  
National Aeronautics and Space Administration,  
Langley Field, Va., July 5, 1960.

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3. Ashby, George C., Jr., and Fitzgerald, Paul E., Jr.: Longitudinal Stability and Control Characteristics of Missile Configurations Having Several Highly Swept Cruciform Fins and a Number of Trailing-Edge and Fin-Tip Controls at Mach Numbers From 2.21 to 6.01. NASA TM X-335, 1960.

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL

(a) M = 1.60

x, in.	r, in. (a)	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			0°	5°	10°	15°	20°	25°	30°	35°
-1.01	.00	0	1.5242	1.5197	1.4886	1.4392	1.3749	1.2942	1.2005	1.0890
-.77	2.07	0	1.4256	1.3525	1.2723	1.1715	1.0674	.9500	.8226	.7005
		90	1.3551	1.3490	1.3361	1.2912	1.2300	1.1593	1.0769	.9806
		180	1.4361	1.4948	1.5312	1.5555	1.5586	1.5462	1.5182	1.4698
-.09	3.93	0	.9217	.8508	.7827	.7100	.6328	.5527	.4766	.3421
		45	.9217	.8758	.8182	.7523	.6823	.6094	.5331	.4167
		90	.9429	.9256	.9104	.8897	.8519	.8046	.7485	.6670
		135	.9499	.9967	1.0417	1.0870	1.1205	1.1417	1.1545	1.1525
		180	.9077	.9789	1.0523	1.1257	1.1946	1.2694	1.3381	1.4139
		0	.0133	.0169	-.0043	-.0530	-.1657	-.1771	-.1679	-.3575
+.36		45	.0124	.0066	-.0184	-.0681	-.1376	-.1809	-.1773	-.3664
		90	.0022	-.0351	-.0544	-.0895	-.1799	-.1890	-.1873	-.3527
		135	-.0013	-.0457	-.0756	-.0930	-.1834	-.2068	-.2226	-.3900
		180	-.0057	-.0529	-.0721	-.0930	-.1658	-.2138	-.2579	-.3974
		0	.0087	-.0009	-.0248	-.0671	-.1517	-.1855	-.1773	-.3634
2.29		45	.0077	-.0253	-.0353	-.0783	-.1582	-.1836	-.1867	-.3773
		90	-.0120	-.0599	-.0828	-.1002	-.1799	-.2103	-.1979	-.4012
		135	-.0084	-.0670	-.0828	-.1002	-.1764	-.2174	-.2014	-.0277
		180	-.0013	-.0670	-.0791	-.0965	-.1622	-.2174	-.0319	-.1776
		0	-.0016	-.0253	-.0494	-.0812	-.1376	-.1836	-.1857	-.3614
4.51		45	-.0064	-.0393	-.0616	-.0942	-.1751	-.1836	-.1847	-.3643
		90	-.0190	-.0777	-.0969	-.1177	-.1694	-.2103	-.2049	-.3676
		135	-.0190	-.0884	-.1005	-.1107	-.1764	-.2174	-.2055	-.0949
		180	-.0120	-.0884	-.1040	-.1107	-.1517	-.2174	-.0352	-.1328
		0	-.0158	-.0375	-.0644	-.0990	-.1470	-.1855	-.1558	-.3594
6.61		45	-.0101	-.0497	-.0766	-.1027	-.1470	-.1846	-.1566	-.3475
		90	-.0331	-.0955	-.1146	-.1212	-.1587	-.2174	-.2296	-.3788
		135	-.0295	-.0955	-.1146	-.1177	-.1694	-.0010	-.0316	-.0395
		180	-.0260	-.0990	-.1146	-.1177	-.1340	-.1516	-.2576	-.3719
		0	-.0148	-.0431	-.0739	-.0942	-.1695	-.1836	-.1529	-.3565
6.93		45	-.0129	-.0515	-.0766	-.1027	-.1788	-.1817	-.1379	-.3594
		90	-.0295	-.0990	-.1146	-.1212	-.1870	-.2494	-.2685	-.3788
		135	-.0295	-.1027	-.1146	-.1177	-.1729	-.0736	-.1552	-.1404
		180	-.0260	-.0990	-.1076	-.1107	-.0986	-.3043	-.4871	-.6035
		0	-.0195	-.0731	-.0993	-.1054	-.1770	-.1995	-.1989	-.3555
8.56		15	-.0177	-.0806	-.0993	-.1092	-.1526	-.1958	-.1895	-.3575
		45	-.0214	-.0872	-.1011	-.0998	-.1770	-.2258	-.1389	-.3594
		75	-.0205	-.0872	-.1020	-.1073	-.1975	-.2613	-.1370	-.3594
		90	-.0401	-.1027	-.1253	-.1212	-.2683	-.2742	-.1837	-.3974
		105	-.0437	-.1098	-.1253	-.1248	-.0845	-.2049	-.1976	-.0881
		135	-.0472	-.1098	-.1253	-.1283	-.0845	-.1268	-.1412	-.1254
		165	-.0437	-.1062	-.1288	-.1248	-.0462	-.2900	-.3600	-.4391
		180	-.0437	-.1027	-.1323	-.1248	-.0250	-.2936	-.3707	-.4877
		0	-.0016	-.0187	-.0720	-.1092	-.1507	-.2080	-.0057	-.3366
		90	-.0082	-.0609	-.0927	-.1120	-.1788	-.2229	-.1745	-.3534
9.03	1.50	180	-.0068	-.0778	-.1077	-.1092	-.2790	-.2866	-.1932	-.4220
		0	-.0195	-.0487	-.0869	-.1092	-.1376	-.2014	-.1050	-.3405
		45	-.0205	-.0497	-.0927	-.1092	-.1470	-.2417	-.2195	-.3733
		90	-.0366	-.1027	-.1288	-.1318	-.2223	-.2494	-.1943	-.3527
		135	-.0366	-.1098	-.1288	-.1283	-.2400	-.2706	-.2120	-.2592
9.59		180	-.0331	-.1133	-.1288	-.1212	-.1093	-.0097	-.0352	-.2785
		0	-.0364	-.0702	-.1077	-.1158	-.1573	-.2070	-.1950	-.3336
		45	-.0317	-.0787	-.1067	-.1129	-.2228	-.2361	-.2317	-.3356
		90	-.0507	-.1098	-.1323	-.1318	-.2188	-.2777	-.2296	-.3862
		135	-.0507	-.1133	-.1323	-.1283	-.0598	-.0328	-.0069	-.0240
10.76		180	-.0507	-.1098	-.1288	-.1212	-.0851	-.1552	-.2364	-.3047

<sup>a</sup>Radius is listed only for hemispherical ablation shield (axial stations of -1.01, -0.77, and -0.09 inches for 1/9-scale model and -0.47 and -0.06 inch for 1/14.9-scale model) and the step between parachute and antenna cannister (axial station of 9.03 inches for the 1/9-scale model).

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TABLE L - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(a)  $M = 1.60$  - Continued

$x$ , in.	$r$ , in.	$\theta$ , deg	$C_p$ at $\alpha$ of:							
			40°	45°	50°	55°	60°	65°	70°	75°
-1.01	.00	0	.9636	.8233	.7071	.6420	.4956	.3744	.2571	.1498
-.77	2.07	0 90 180	.5551 .8661 1.4207	.3916 .7032 1.2738	.2765 .6156 1.1910	.2013 .5547 1.0871	.0951 .4389 1.0093	.0041 .3484 .8538	-.0768 .2397 .7340	-.1541 .1585 .5624
-.09	3.93	0 45 90 135 180	.2140 .3115 .5887 1.1396 1.4582	.0576 .1664 .4593 1.0786 1.4953	-.0246 .0745 .3908 1.0767 1.5492	-.0649 .0311 .3714 1.0915 1.5278	-.1444 .0661 .2736 1.0398 1.4838	-.2137 .1310 .1958 .9714 1.4203	-.2762 .2025 .1357 .8858 1.2803	-.3148 .2541 .0891 .7752 1.1052
.36		0 45 90 135 180	-.3585 -.3624 -.3781 -.4156 -.3482	-.3726 -.3667 -.3967 -.3516 -.0250	-.3628 -.3529 -.4247 -.0055 .3146	-.3182 -.3346 -.3747 .1794 .6158	-.3152 -.3420 -.3664 .4041 1.0485	-.3106 -.3326 -.3053 .6534 1.3723	-.3418 -.3429 -.1635 .7600 1.4321	-.3162 .3149 .1064 .7752 1.4961
2.29		0 45 90 135 180	-.3506 -.3595 -.3406 -.0641 -.3302	-.3646 -.3776 -.3440 .1401 -.4780	-.3559 -.3628 -.3256 .2346 .6309	-.3334 -.2832 -.2837 .2929 .7293	-.3374 -.2837 -.2791 .3606 .8569	-.3326 -.2762 -.2782 .4311 .9932	-.3382 -.2758 -.5043 .5667 1.1199	-.3149 .2758 .5667 .2355
4.51		0 45 90 135 180	-.3536 -.3546 -.3857 -.0371 -.2328	-.3200 -.3438 -.4078 .0125 .3428	-.3175 -.3353 -.4056 .0860 .4898	-.3147 -.3205 -.3616 .1532 .5634	-.3327 -.3350 -.3577 .2169 .6959	-.3326 -.3337 -.3314 .3179 .8451	-.3287 -.3334 -.3196 .4132 .9899	-.3034 .3103 .3018 .4929 1.1227
6.61		0 45 90 135 180	-.3495 -.3377 -.3857 -.1091 .5176	-.3469 -.3438 -.4041 .1890 .6731	-.3442 -.3511 -.3903 .3070 .8862	-.3088 -.3007 -.3398 .3977 .9868	-.3198 -.3117 -.3403 .4563 1.1008	-.3326 -.3291 -.3358 .5052 1.1806	-.3252 -.3122 -.3239 .5432 1.2414	-.2884 -.2884 .3018 .5754 1.3136
6.93		0 45 90 135 180	-.3475 -.3506 -.3819 -.1915 .7237	-.3459 -.3519 -.4078 .2716 .9022	-.3402 -.3511 -.3942 .3869 1.1109	-.3065 -.3088 -.3486 .4543 1.2006	-.3152 -.3222 -.3534 .5000 1.2749	-.3303 -.3222 -.3489 .5357 1.3375	-.3193 -.3252 -.3412 .5563 1.3758	-.2837 -.2872 -.3366 .5841 1.4092
8.56		0 15 45 75 90 105 135 165 180	-.3436 -.3456 -.3475 -.3456 -.4006 .1091 .1802 .5326 .5963	-.3418 -.3418 -.3428 -.3479 .4417 .1251 .2265 .6019 .6920	-.3412 -.3412 -.3402 -.3549 .4322 .1659 .2841 .6956 .7986	-.2984 -.3030 -.3019 -.3053 -.3053 .2231 .3496 .7554 .8383	-.3082 -.3152 -.3152 -.3163 -.3163 .2430 .3954 .8264 .9049	-.3314 -.3314 -.3442 -.3453 -.3453 .2743 .4398 .8264 .9801	-.3371 -.3334 -.3205 -.3217 -.3217 .3177 .4825 .9726 1.0592	-.2999 -.2976 -.2803 -.2803 -.2803 .3844 .5450 .1.0575 1.1530
9.03	1.50	0 90 180	-.3357 -.3446 -.3933	-.3369 -.3399 -.3538	-.3343 -.3717 -.3047	-.3194 -.3626 -.2574	-.3269 -.3234 -.1878	-.3175 -.2320 -.0227	-.3737 -.1479 .1605	-.3428 -.0766
9.59		0 45 90 135 180	-.3316 -.3644 -.3631 -.2245 .4314	-.3330 -.3428 -.4304 -.1864 .6019	-.3333 -.3373 -.4361 -.1465 .8289	-.3030 -.3194 -.3704 -.0693 .9038	-.3140 -.3303 -.3664 .1908 1.0963	-.3186 -.3186 -.3532 -.4965 1.3767	-.3666 -.4315 -.3196 -.6430 1.4278	-.3358 -.4075 -.2975 -.7057 1.5178
10.76		0 45 90 135 180	-.3337 -.3357 -.3594 .0341 .4201	-.3399 -.3438 -.3779 .1063 .5531	-.3284 -.3323 -.3561 .2041 .7185	-.3334 -.3322 -.3224 .2841 .8209	-.3292 -.3280 -.3273 .3693 .9527	-.3186 -.3186 -.3314 .4442 1.0717	-.3666 -.3606 -.3283 .4956 1.1503	-.3393 -.3347 -.3192 .5407 1.2181

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(a)  $M = 1.60$  - Continued

x, in.	r, in.	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			80°	85°	95°	100°	105°	110°	115°	120°
-1.01	.00	0	-0.0604	-0.0242	-0.2107	-0.2804	-0.3488	-0.3849	-0.3419	-0.2550
-0.77	2.07	0	-0.2077	-0.2736	-0.3654	-0.3965	-0.4230	-0.3486	-0.3299	-0.2472
	90	-0.0734	-0.0066	-0.1996	-0.2615	-0.3295	-0.3230	-0.3425	-0.2402	-0.2487
	180	-0.4193	-0.2559	-0.0437	-0.1005	-0.2236	-0.3097	-0.3635		
-0.09	3.93	0	-0.3461	-0.3830	-0.4022	-0.3523	-0.3411	-0.3486	-0.3332	-0.2450
	45	-0.2986	-0.3305	-0.3933	-0.3899	-0.3654	-0.3441	-0.3408	-0.2539	
	90	-0.0302	-0.0722	-0.4129	-0.4394	-0.4649	-0.3319	-0.3339	-0.2317	
	135	-0.5189	-0.1291	-0.4342	-0.4733	-0.4861	-0.3541	-0.3551	-0.2529	
	180	-0.7048	-0.1684	-0.3361	-0.4097	-0.4395	-0.4738	-0.3763	-0.2529	
.36		0	-0.3725	-0.3749	-0.3554	-0.3523	-0.3388	-0.3586	-0.3343	-0.2450
	45	-0.4324	-0.3772	-0.3487	-0.3291	-0.3543	-0.3430	-0.3343	-0.2450	
	90	-0.1256	-0.1992	-0.2508	-0.2361	-0.2152	-0.1856	-0.1733	-0.1470	
	135	-0.7567	-0.7373	-0.6967	-0.6959	-0.6823	-0.7413	-0.6847	-0.6836	
	180	1.5136	1.5120	1.5075	1.4584	1.4103	1.4508	1.3062	1.2726	
2.29		45	-0.3702	-0.3714	-0.3476	-0.3367	-0.3454	-0.3541	-0.3441	-0.2627
	90	-0.2726	-0.2692	-0.2592	-0.2488	-0.2236	-0.1988	-0.1988	-0.1681	
	135	-0.6140	-0.6717	-0.7094	-0.7383	-0.7584	-0.8344	-0.7693	-0.7769	
	180	1.3363	1.4200	1.5160	1.5432	1.5457	1.6415	1.5091	1.4804	
4.51		0	-0.3643	-0.3375	-0.3654	-0.3666	-0.3666	-0.3883	-0.3736	-0.2949
	45	-0.3655	-0.3585	-0.3554	-0.3622	-0.3532	-0.3740	-0.3725	-0.3048	
	90	-0.2855	-0.2736	-0.2592	-0.2446	-0.2194	-0.1856	-0.1902	-0.1512	
	135	-0.5664	-0.6324	-0.7052	-0.7383	-0.7753	-0.8611	-0.8116	-0.8277	
	180	1.2238	1.3193	1.4563	1.5050	1.5373	1.6504	1.5428	1.5227	
6.61		0	-0.3502	-0.3655	-0.3688	-0.3811	-0.3765	-0.3519	-0.3201	-0.2616
	45	-0.3550	-0.3620	-0.3688	-0.3800	-0.3742	-0.4313	-0.4215	-0.3965	
	90	-0.3202	-0.3174	-0.2849	-0.2615	-0.2067	-0.1500	-0.1692	-0.1766	
	135	-0.6140	-0.6454	-0.6711	-0.7002	-0.7288	-0.8123	-0.7651	-0.7811	
	180	1.3535	1.4026	1.4947	1.5220	1.5457	1.6504	1.5428	1.5312	
6.93		0	-0.3467	-0.3597	-0.3643	-0.3789	-0.3798	-0.4081	-0.4118	-0.3258
	45	-0.3513	-0.3620	-0.3688	-0.3789	-0.3876	-0.4500	-0.4357	-0.4054	
	90	-0.3375	-0.3261	-0.2934	-0.2657	-0.2236	-0.1988	-0.2157	-0.2191	
	135	-0.6053	-0.6366	-0.6711	-0.6959	-0.7203	-0.7989	-0.7462	-0.7684	
	180	1.4400	1.4725	1.5373	1.5474	1.5543	1.6547	1.5387	1.5184	
8.56		0	-0.3561	-0.3935	-0.3777	-0.4010	-0.4485	-0.4797	-0.4619	-0.4153
	15	-0.3550	-0.3876	-0.3744	-0.4032	-0.4307	-0.4688	-0.4488	-0.4561	
	45	-0.3455	-0.3585	-0.3577	-0.3722	-0.4307	-0.4556	-0.4248	-0.4109	
	75	-0.3455	-0.3643	-0.3446	-0.3631	-0.4014	-0.4339	-0.4397	-0.4182	
	90	-0.3455	-0.3703	-0.3717	-0.3761	-0.3452	-0.2917	-0.2741		
	105	-0.4453	-0.4879	-0.5601	-0.6154	-0.6696	-0.7014	-0.7076	-0.7472	
	135	-0.6010	-0.6673	-0.7436	-0.7806	-0.8176	-0.9010	-0.8327	-0.8277	
	165	1.1372	1.2274	1.3240	1.3610	1.3849	1.4774	1.3738	1.3744	
	180	1.2411	1.3368	1.4776	1.5220	1.5500	1.6504	1.5218	1.4719	
9.03	1.50	0	-0.3877	-0.4005	-0.3911	-0.3844	-0.3145	-0.1777	-0.1051	-0.1522
	90	-0.0332	-0.0131	-0.0416	-0.0370	-0.0289	-0.0259	-0.0339	-0.0183	
	180	—	—	.9228	1.0814	1.2495	1.4819	1.5387	1.5397	
9.59		0	-0.3772	-0.3830	-0.3755	-0.4164	-0.4042	-0.3938	-0.3703	-0.3568
	45	-0.4148	-0.4111	-0.4000	-0.4220	-0.4230	-0.4246	-0.3900	-0.3568	
	90	-0.2899	-0.2867	-0.2891	-0.2784	-0.2617	-0.2343	-0.2368	-0.2106	
	135	-0.7048	-0.7111	-0.6924	-0.7129	-0.7330	-0.8033	-0.7566	-0.7684	
	180	1.5092	1.5163	1.5416	1.5516	1.5585	1.6547	1.5428	1.5227	
10.76		0	-0.3713	-0.3807	-0.3844	-0.4396	-0.4539	-0.4181	-0.3801	-0.3534
	45	-0.3702	-0.3818	-0.3755	-0.4352	-0.4805	-0.4721	-0.4335	-0.3988	
	90	-0.3202	-0.3130	-0.2977	-0.2827	-0.2575	-0.2299	-0.2283	-0.1936	
	135	-0.5750	-0.6192	-0.6711	-0.7044	-0.7373	-0.8344	-0.7904	-0.8023	
	180	1.2713	1.3456	1.4648	1.5009	1.5373	1.6547	1.5514	1.5269	

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(a)  $M = 1.60$  - Concluded

x, in.	r, in.	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			125°	150°	155°	160°	165°	170°	175°	180°
-1.01	.00	0	-.2409	—	—	—	—	—	—	—
-0.77	2.07	0	-.2332	-.1873	-.3707	-.3647	-.3358	-.3111	-.3119	-.3033
	45	90	-.2395	-.2664	-.3668	-.3656	-.3368	-.3101	-.3020	-.2904
	90	135	-.2352	-.2634	-.3698	-.3637	-.3378	-.3032	-.2841	-.2445
-0.09	3.93	0	-.2299	-.1951	-.3707	-.3656	-.3378	-.3101	-.3080	-.2943
	45	90	-.2475	-.2088	-.3707	-.3656	-.3358	-.3071	-.3020	-.2853
	90	135	-.2267	-.2302	-.3618	-.3647	-.3368	-.3052	-.2911	-.2724
	135	180	-.2395	-.2498	-.3638	-.3637	-.3358	-.3011	-.2821	-.2506
	180	—	-.2523	-.2556	-.3480	-.3436	-.3189	-.2952	-.2791	-.2306
.36		0	-.2266	.3327	.1706	.2390	.3486	.4298	.3222	.5831
	45	90	-.2199	-.0544	.0142	.1829	.3185	.4710	.5431	.5943
	90	135	-.1036	.1597	.2774	.3588	.5097	.5758	.6405	.6131
	135	180	.6949	.8062	.8534	.8416	.8018	.7817	.7341	.6542
	180	—	1.2343	1.0843	1.0976	1.0400	.9666	.8528	.7603	.6317
2.29		0	—	.0884	.0638	.1081	.1687	.2166	.2397	.3587
	45	90	-.2387	-.1408	-.1155	-.0257	-.0938	-.1941	-.2772	.3624
	90	135	-.1504	—	—	—	—	—	—	—
	135	180	.7671	.7272	.7046	.6358	.5545	.4936	.4344	.3661
	180	—	—	1.1256	1.0517	.9015	.7419	.5945	.4757	.3699
4.51		0	-.2774	.0433	.0667	.1231	.1687	.2129	.1910	.3587
	45	90	-.2863	-.1447	-.2032	-.0079	.1575	.2166	.2660	.3661
	90	135	-.1248	-.0168	.0332	.1268	.1950	.3138	.3559	.3811
	135	180	.8223	.7723	.7314	.6171	.5545	.4936	.4532	.3886
	180	—	1.4891	1.1744	1.0747	.9015	.7344	.5982	.4906	.3923
6.61		0	-.2708	-.0131	.0180	.0482	.1162	—	—	.1753
	45	90	-.3536	-.1672	-.1804	-.1240	.0638	.3026	.2172	.2276
	90	135	-.2013	-.2160	-.2185	-.0145	.0413	.1230	.2360	.2315
	135	180	.7926	—	—	—	—	—	—	—
	180	—	1.5103	1.3323	.9374	.6807	.5283	.3925	.3408	.2651
6.93		0	-.3039	-.1221	-.0583	-.0229	.0301	.0145	-.0300	.1267
	45	90	-.3725	-.2085	-.2147	-.1689	-.0973	.1268	.1461	.1566
	90	135	-.2267	—	—	—	—	—	—	—
	135	180	.7798	1.4934	.7874	.6283	.4786	.3523	.2914	.2389
	180	—	—	1.0054	.7467	.5497	.4010	.2728	.2060	.1640
8.56		0	-.3558	-.3626	-.2796	-.1876	-.2097	.2100	-.0936	.2587
	15	45	-.4144	-.3588	-.3253	-.2661	-.1946	-.1651	-.1011	.1764
	45	75	-.3912	-.3626	-.3253	-.3373	-.3445	-.2811	-.1311	.1651
	75	90	-.4093	—	—	—	—	—	—	—
	90	105	-.2649	-.3927	-.3788	-.3597	-.3258	-.2699	-.2658	.2400
	105	135	.9327	-.0319	-.0660	-.0827	-.0561	-.0454	-.0862	.1315
	135	165	.7883	.0583	.0524	-.0790	-.1048	-.1239	-.1385	.1651
	165	180	1.3191	1.3744	.2876	.2202	.1194	.0526	-.0116	.1090
	180	—	—	—	.0395	-.0278	-.0977	-.1610	.2100	.2624
9.03	1.50	0	-.2486	.1485	-.0278	-.1202	-.0822	-.0004	-.0337	.0342
	90	180	.0578	.3176	.3384	.4524	.3860	.3550	.3484	.0106
	180	—	1.5401	1.5090	1.3875	1.2271	1.0454	.8640	.5394	.1304
9.59		0	-.3426	-.1259	-.1422	-.1726	-.1572	-.1090	-.0599	.0829
	45	90	-.3183	-.2574	-.1728	-.2362	-.2771	-.2212	-.1610	.0904
	90	135	-.1970	.1523	.2392	.2915	.2474	.3101	.0000	.0866
	135	180	.7629	.8776	.8343	.7779	.6258	.4224	.1723	.0492
	180	—	1.4891	1.2910	1.1662	1.0250	.7981	.6058	.2435	.0268
10.76		0	-.3481	-.2950	-.2872	-.2624	-.2284	-.1875	-.0974	.0829
	45	90	-.3514	-.2987	-.2986	-.2811	-.2583	-.2212	-.1311	.0941
	90	135	-.1716	—	—	—	—	—	—	—
	135	180	.7840	.4792	.3766	.2840	.1462	.0182	.0786	.1128
	180	—	1.4678	.7911	.5978	.4524	.2661	.0969	.0711	.1166

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/8-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued  
(b) M = 2.00

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:							
			0°	5°	10°	15°	20°	25°	30°	35°
-1.01	.00	0	1.6262	1.6079	1.5726	1.5113	1.4382	1.3511	1.2459	1.1168
-.77	2.07	0	1.5082	1.4350	1.3341	1.2312	1.1137	.9999	.8701	.6789
		90	1.4493	1.4423	1.4038	1.3602	1.2907	1.1995	1.1096	.9604
		180	1.5451	1.5968	1.6313	1.6476	1.6445	1.6322	1.5997	1.4961
-.09	3.93	0	1.0364	.9640	.8829	.8074	.7303	.6375	.5126	.3388
		45	1.0437	.9860	.9232	.8517	.7856	.6929	.6010	.4443
		90	1.0585	1.0522	1.0296	.9954	.9552	.8963	.8405	.7023
		135	1.0622	1.1221	1.1690	1.1981	1.2243	1.2476	1.2570	1.2067
		180	1.0364	1.1148	1.1764	1.2459	1.3238	1.3918	1.4560	1.4961
.36		0	-.1759	-.1966	-.2171	-.2464	-.2589	-.2659	-.2531	-.2608
		45	-.1809	-.2015	-.2152	-.2513	-.2589	-.2629	-.2561	-.2629
		90	-.1729	-.1842	-.1921	-.2244	-.2244	-.2315	-.2244	-.2672
		135	-.2096	-.2136	-.2251	-.2761	-.2724	-.2795	-.2650	-.2828
		180	-.2096	-.2136	-.2288	-.2724	-.2760	-.2869	-.2724	-.2398
2.29		0	-.1837	-.2034	-.2171	-.2522	-.2609	-.2678	-.2550	-.2608
		45	-.1897	-.2064	-.2191	-.2571	-.2638	-.2687	-.2638	-.2690
		90	-.2096	-.2136	-.2288	-.2724	-.2760	-.2905	-.2761	-.2868
		135	-.2134	-.2136	-.2288	-.2797	-.2465	-.1278	-.0439	.0221
		180	-.2134	-.2210	-.2361	-.2687	-.1323	-.0318	.0777	.2097
4.51		0	-.1946	-.2073	-.2201	-.2552	-.2629	-.2648	-.2580	-.2473
		45	-.1985	-.2092	-.2210	-.2571	-.2659	-.2757	-.2580	-.2556
		90	-.2134	-.2173	-.2288	-.2687	-.2576	-.2462	-.2355	-.2595
		135	-.2171	-.2210	-.2324	-.1987	-.1434	-.1020	-.0586	-.0249
		180	-.2171	-.2173	-.2251	-.1544	-.0733	-.0170	.0629	.1550
6.61		0	-.2004	-.2103	-.2191	-.2513	-.2501	-.2727	-.2541	-.2556
		45	-.2004	-.2112	-.2259	-.2620	-.2904	-.2727	-.2550	-.2556
		90	-.2134	-.2173	-.2288	-.2208	-.2244	-.2426	-.2426	-.2672
		135	-.2134	-.2173	-.2104	-.1139	-.1249	-.0946	-.0402	.0182
		180	-.2134	-.2173	-.1664	-.0255	-.0364	-.0200	.1146	.2567
6.93		0	-.1955	-.2043	-.2161	-.2434	-.2443	-.2659	-.2403	-.2545
		45	-.2014	-.2112	-.2289	-.2620	-.2904	-.2687	-.2521	-.2556
		90	-.2134	-.2173	-.2288	-.1839	-.1987	-.2277	-.2319	-.2633
		135	-.2134	-.2173	-.1883	.0151	.0558	.0792	.1293	.1589
		180	-.2134	-.2136	-.1407	.1256	.2475	.3306	.4352	.5616
8.56		0	-.2239	-.2161	-.2092	-.2287	-.2481	-.2452	-.2305	-.2431
		15	-.2288	-.2161	-.2092	-.2425	-.2629	-.2619	-.2482	-.2481
		45	-.2288	-.2073	-.2141	-.2532	-.2589	-.2589	-.2452	-.2504
		75	-.2210	-.2122	-.2456	-.2924	.3140	-.2825	-.2472	-.2494
		90	-.2207	-.2136	-.2545	-.1397	-.2023	-.2351	-.2355	-.2672
		105	-.2207	-.2099	-.0857	.0998	.1184	.1051	.1256	.1159
		135	-.2171	-.2099	-.0379	.0482	.0741	.0977	.1367	.1785
		165	-.2096	-.1915	.0464	.1256	.1774	.2455	.3431	.4443
		180	-.2096	-.1842	.0464	.1035	.1478	.2197	.3209	.4600
9.03	1.50	0	-.1475	-.1799	-.2043	-.2336	-.2599	-.2629	-.2433	-.2452
		90	-.1779	-.2015	-.2465	-.2453	-.2569	-.2629	-.2394	-.2484
		180	-.1877	-.1927	-.2612	-.2669	-.2864	-.2864	-.2708	-.2535
9.59		0	-.1710	-.1985	-.2004	-.2248	-.2452	-.2481	-.2384	-.2431
		45	-.1769	-.2064	-.2141	-.2355	-.2560	-.2589	-.2521	-.2556
		90	-.2060	-.2099	-.2434	-.2577	-.2613	-.2573	-.2355	-.2672
		135	-.2023	-.1915	-.1847	-.2208	-.1838	-.1649	-.1397	-.1187
		180	-.2060	-.1731	-.0600	-.0365	.0189	.0755	.1514	.2685
10.76		0	-.1847	-.1927	-.1975	-.2062	-.2324	-.2471	-.2364	-.2401
		45	-.1847	-.2034	-.2152	-.2199	-.2344	-.2481	-.2384	-.2401
		90	-.2023	-.1952	-.2361	-.2429	-.2391	-.2351	-.2282	-.2282
		135	-.1949	-.1621	-.0673	-.0733	-.0659	-.0392	.0114	.0416
		180	-.1838	-.1289	.0024	.0187	.0631	.1235	.2140	.3192

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE 1/14.9-SCALE MODEL - Continued

**(b) M = 2.00 - Continued**

x, in.	r, in.	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			40°	45°	50°	55°	60°	65°	70°	75°
-1.01	.00	0	.9956	.8653	.7404	.6170	.5059	.3804	.2705	.1756
-.77	2.07	0	.5655	.4410	.3259	.2292	.1588	.0595	-.0137	-.0759
		90	.8510	.7330	.6259	.5108	.4237	.3214	.2114	.1386
		180	1.4140	1.3209	1.2220	1.063	.9991	.8487	.7099	.5678
-.09	3.93	0	.2333	.1373	.0495	-.0201	-.0649	-.1211	-.1763	-.2128
		45	.3388	.2385	.1482	.0722	.0173	.0511	-.1171	-.1574
		90	.6281	.5383	.4601	.3861	.3232	.2440	.1671	.1202
		135	1.1911	1.1691	1.1549	1.1202	1.0721	1.0073	.9019	.7787
		180	1.5664	1.6051	1.6602	1.6372	1.5699	1.4756	1.3228	1.1302
+.36		0	-.2690	-.2710	-.2632	-.2381	-.2228	-.2535	-.2584	-.2533
		45	-.2680	-.2690	-.2622	-.2697	-.2595	-.2535	-.2695	-.2742
		90	-.2633	-.2598	-.2781	-.2141	-.2065	-.1728	-.0728	-.0316
		135	-.2789	-.1197	.0376	.1969	.4283	.6828	.7874	.8047
		180	-.0522	.1528	.2942	.5939	1.0721	1.4388	1.5148	1.5853
2.29		0	-.2680	-.2679	-.2601	-.2684	-.2607	-.2545	-.2705	-.2752
		45	-.2741	-.2783	-.2653	-.2684	-.2607	-.2545	-.1614	-.1499
		90	-.2164	-.1976	-.1913	-.1632	-.1608	-.1469	.5326	.6048
		135	.1042	.1840	.2626	.3354	.3871	.4800	1.0405	1.2856
		180	.3388	.4839	.6614	.7648	.8941	1.0405	1.1640	
4.51		0	-.2389	-.2462	-.2488	-.2611	-.2607	-.2545	-.2705	-.2752
		45	-.2534	-.2554	-.2530	-.2624	-.2607	-.2545	-.2705	-.2752
		90	-.2555	-.2520	-.2466	-.2141	-.2110	-.1949	-.1836	-.1574
		135	.0260	.0867	.1600	.2200	.2821	.3620	.4478	.5530
		180	.2605	.3787	.5311	.6170	.7434	.8783	1.0127	1.1635
6.61		0	-.2534	-.2523	-.2374	-.2563	-.2607	-.2545	-.2705	-.2752
		45	-.2513	-.2533	-.2405	-.2563	-.2607	-.2535	-.2705	-.2742
		90	-.2594	-.2481	-.2387	-.1909	-.1881	-.1728	-.1688	-.1610
		135	.1159	.2151	.3219	.4046	.5059	.6091	.6656	.7010
		180	.4444	.6318	.8391	.9633	1.1361	1.2913	1.3855	1.4484
6.93		0	-.2523	-.2513	-.2344	-.2478	-.2571	-.2525	-.2653	-.2533
		45	-.2513	-.2533	-.2395	-.2515	-.2521	-.2525	-.2653	-.2613
		90	-.2594	-.2481	-.2427	-.1955	-.1881	-.1728	-.1799	-.2128
		135	.2136	.3047	.4048	.4785	.5745	.6570	.6877	.7121
		180	.6945	.8614	1.0641	1.1710	1.3690	1.4904	1.5443	1.5742
8.56		0	-.2482	-.2533	-.2395	-.2392	-.2363	-.2505	-.2573	-.2632
		15	-.2482	-.2533	-.2395	-.2405	-.2448	-.2595	-.2684	-.2642
		45	-.2482	-.2533	-.2395	-.2442	-.2400	-.2595	-.2533	-.2543
		75	-.2523	-.2544	-.2395	-.2442	-.2497	-.2595	-.2644	-.2602
		90	-.2594	-.2481	-.2387	-.2387	-.2442	-.2595	-.2644	-.2602
		105	.1628	.2191	.2785	.3354	.3598	.4025	.4108	.4236
		135	.2528	.3437	.4404	.4878	.5288	.6091	.6361	.6566
		165	.5812	.7252	.8667	.9540	.9945	1.0774	1.1382	1.1820
9.03	1.50	0	-.2451	-.2533	-.2426	-.2454	-.2485	-.2595	-.2825	-.2772
		90	-.2523	-.2710	-.2601	-.2418	-.2008	-.1668	-.0829	.0195
		180	-.2285	-.1943	-.1631	-.1299	-.0617	-.0055	.1359	.3601
9.59		0	-.2409	-.2503	-.2395	-.2332	-.2387	-.2446	-.2795	-.2752
		45	-.2451	-.2533	-.2477	-.2442	-.2485	-.2655	-.2896	-.2912
		90	-.2828	-.2754	-.2703	-.2232	-.2384	-.2244	-.1947	-.1610
		135	-.0678	-.0106	.0258	.0677	.1223	.4025	.6582	.8157
		180	.4710	.5850	.7720	.9217	.1132	.13061	.15886	1.6445
10.76		0	-.2389	-.2492	-.2457	-.2442	-.2485	-.2655	-.2775	-.2723
		45	-.2409	-.2503	-.2457	-.2442	-.2473	-.2655	-.2724	-.2702
		90	-.2633	-.2481	-.2347	-.1864	-.1791	-.1580	-.1614	-.1499
		135	.1120	.1996	.3022	.3769	.4648	.5795	.6250	.6640
		180	.4639	.6278	.7917	.8986	1.0447	1.2028	1.2858	1.3411

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(b) M = 2.00 - Continued

x, in.	r, in.	$\beta$ , deg	$C_p$ at $\alpha$ of:								
			80°	85°	95°	100°	105°	110°	115°	120°	
-1.01	.00	0	.1003	.0297	-.1182	-.1677	-.2139	-.2547	-.2769	-.2557	
-0.77	2.07	0	-.1247	-.1582	-.2359	-.2606	-.2791	-.2489	-.2337	-.2475	
	90		.0708	.0222	-.0881	-.1409	-.1809	-.2336	-.2244	-.2203	
	180		.4434	.3133	.1190	.0047	-.0927	-.1806	-.2333	-.2556	
-0.09	3.93	0	-.2281	-.2466	-.2627	-.2408	-.2291	-.2349	-.2453	-.2486	
	45		-.1875	-.2098	-.2581	-.2560	-.2477	-.2477	-.2594	-.2580	
	90		.0708	-.0072	-.2514	-.2821	-.2867	-.2954	-.2377	-.2335	
	135		.5429	.1291	-.2337	-.2777	-.2867	-.3174	-.2554	-.2511	
	180		.7790	.2322	-.1059	-.1983	-.2426	-.2909	-.2952	-.2600	
.36		0	-.2494	-.2492	-.2487	-.2351	-.2267	-.2325	-.2477	-.2475	
	45		-.2905	-.2659	-.2348	-.2269	-.2325	-.2372	-.2442	-.2347	
	90		-.0473	-.0956	-.1190	-.1012	-.0839	-.0701	-.0520	-.0127	
	135		.8012	.7811	.7803	.7593	.7798	.7688	.7752	.7955	
	180		1.6201	1.6209	1.6137	1.5580	1.5247	1.4663	1.4254	1.3830	
2.29		45	-.2571	-.2581	-.2336	-.2257	-.2291	-.2337	-.2500	-.2545	
	90		-.1358	-.1287	-.1014	-.0879	-.0750	-.0701	-.0475	-.0303	
	135		.6720	.7259	.7848	.8166	.8372	.8526	.8637	.8707	
	180		1.4025	1.4847	1.5828	1.6153	1.6260	1.6165	1.6023	1.5684	
4.51		0	-.2523	-.2502	-.2627	-.2421	-.2419	-.2523	-.2663	-.2568	
	45		-.2552	-.2512	-.2557	-.2397	-.2361	-.2489	-.2675	-.2708	
	90		-.1395	-.1177	-.0926	-.0836	-.0662	-.0569	-.0343	-.0038	
	135		.6389	.7111	.7936	.8342	.8637	.8923	.9079	.9148	
	180		1.2991	1.4036	1.5299	1.5801	1.6085	1.6208	1.6244	1.6082	
6.61		0	-.2543	-.2669	-.2534	-.2514	-.2279	—	—	—	
	45		-.2533	-.2659	-.2651	-.2514	-.2547	-.2570	-.2896	-.2825	
	90		-.1468	-.1361	-.1102	-.1057	-.0795	-.0525	-.0033	-.0038	
	135		.7348	.7590	.7848	.7990	.8284	.8438	.8637	.8795	
	180		1.4984	1.5288	1.5917	1.6153	1.6260	1.6340	1.6332	1.6214	
6.93		0	-.2494	-.2551	-.2593	-.2514	-.2536	-.2594	-.2884	-.2615	
	45		-.2543	-.2620	-.2616	-.2525	-.2605	-.2652	-.2978	-.2929	
	90		-.1616	-.1509	-.1190	-.1100	-.0883	-.0569	-.0387	-.0524	
	135		.7311	.7553	.7848	.8034	.8196	.8349	.8548	.8662	
	180		1.5943	1.6062	1.6401	1.6419	1.6393	1.6340	1.6244	1.6038	
8.56		0	-.2582	-.2570	-.2581	-.2606	-.2861	-.3024	-.3129	-.3164	
	15		-.2621	-.2639	-.2557	-.2618	-.2838	-.2942	-.3164	-.3151	
	45		-.2435	-.2521	-.2465	-.2525	-.2919	-.2955	-.3059	-.3000	
	75		-.2533	-.2669	-.2072	-.2159	-.2293	-.2424	-.2510	-.2423	
	90		—	—	-.1852	-.1895	-.1853	-.1806	-.1227	-.1142	
	105		.4876	.5232	.5688	.6225	.6785	.6671	.6070	.6088	
	135		.7090	.7590	.8510	.8829	.9076	.9233	.9211	.8927	
	165		1.2513	1.3263	1.4065	1.4301	1.4586	1.4530	1.4431	1.4315	
	180		1.3508	1.4330	1.5784	1.6110	1.6393	1.6340	1.6112	1.5288	
9.03	1.50	0	-.2640	-.2678	-.2663	-.2525	-.1987	-.1673	-.0963	-.1005	
	90		-.1094	-.1472	.1279	.1150	.1012	.0844	.0895	.1376	
	180		—	—	.9876	1.1564	1.3264	1.4840	1.6288	1.6347	
9.59		0	-.2651	-.2669	-.2616	-.2733	-.2663	-.2605	-.2499	—	
	45		-.2788	-.2708	-.2674	-.2746	-.2780	-.2710	—	-.2521	
	90		-.1395	-.1287	-.1235	-.1100	-.1060	-.1011	-.0785	-.0612	
	135		.8639	.8474	.8289	.8254	.8372	.8393	.8548	.8574	
	180		1.7013	1.6614	1.6754	1.6507	1.6525	1.6429	1.6332	1.5994	
10.76		0	-.2670	-.2669	-.2663	-.2932	-.3000	-.2780	-.2686	-.2638	
	45		-.2651	-.2659	-.2651	-.2897	-.3105	-.3071	-.2966	-.2732	
	90		-.1358	-.1287	-.1102	-.1100	-.1015	-.0923	-.0785	-.0657	
	135		.7090	.7443	.8024	.8211	.8460	.8658	.8814	.8707	
	180		1.4061	1.4663	1.5872	1.6153	1.6393	1.6517	1.6421	1.5949	

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued  
(b) M = 2.00 - Concluded

x, in.	r, in.	$\beta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			125°	150°	155°	160°	165°	170°	175°	180°
-1.01	.00	0	-.2500	—	—	—	—	—	—	—
-0.77	2.07	0 90 180	-.2430 -.2203 -.2379	-.2540 -.2593 -.2571	-.2770 -.2728 -.2759	-.2624 -.2635 -.2676	-.2479 -.2501 -.2501	-.2343 -.2333 -.2312	-.2264 -.2223 -.2181	-.2300 -.2207 -.2082
-0.09	3.93	0 45 90 135 180	-.2430 -.2511 -.2395 -.2379 -.2511	-.2510 -.2561 -.2530 -.2582 -.2447	-.2770 -.2728 -.2645 -.2707 -.2655	-.2614 -.2614 -.2604 -.2604 -.2583	-.2491 -.2491 -.2479 -.2491 -.2438	-.2343 -.2333 -.2292 -.2282 -.2282	-.2254 -.2233 -.2170 -.2140 -.2140	-.2249 -.2207 -.2092 -.1977 -.1926
.36		0 45 90 135 180	-.2442 -.2267 .0271 .8000 1.3477	.1481 -.0424 .3074 1.0380 1.3062	.1884 -.0259 .3716 1.0731 1.3225	.1989 .0717 .3895 1.0527 1.2870	.2635 .2128 .4236 .5168 .8846	.3428 .3349 .5467 .7817 .8846	.3555 .4312 .5567 .6661 .6781	.5216 .5333 .5567 .5880 .5489
2.29		0 45 90 135 180	— -.2639 .0038 .8662 1.5155	.0509 -.1007 — .8398 1.2401	.0248 -.1350 — .7535 1.0965	.0599 -.0831 — .6397 .8939	.1074 .0723 — .5446 .7281	.1688 .1451 — .4653 .5722	.1804 .2003 — .3754 .4113	.2872 .2911 — .3107 .3145
4.51		0 45 90 135 180	-.2336 -.2756 .0271 .9192 1.5729	.0315 -.1085 .1053 .8593 1.2790	.0482 -.2051 .0911 .7380 1.0576	.0677 -.0991 .1512 .6596 .9098	.1074 .0991 .1660 .5524 .7436	.1569 .1727 .2320 .4535 .5801	.1525 .2162 .2800 .3675 .4153	.2599 .2755 .2990 .3107 .3224
6.61		0 45 90 135 180	— -.2780 .0215 .8927 1.6038	-.0152 -.2134 -.1085 — 1.1935	-.0220 -.1272 -.1272 — .9290	-.0002 -.0553 -.0037 — .7548	.0489 .0176 .0566 — .5720	.0700 .1292 .0937 — .4337	.0490 .2162 .1684 — .2878	.0842 .1818 .1975 — .2170
6.93		0 45 90 135 180	-.2547 -.2791 .0524 .8839 1.5906	-.0889 -.1706 — .6221 .9098	-.0726 -.1350 — .4691 .7107	-.0474 -.0995 — .3776 .5523	-.0176 -.0995 — .2908 .4002	-.0250 -.0066 — .2242 .2717	-.0107 .0808 — .1286 .1406	.0490 .1037 — .1154 .1037
8.56		0 15 45 75 90 105 135 165 180	-.2989 -.2930 -.2989 -.2423 -.1363 .7647 .8353 1.3344 1.4006	-.2406 -.2250 -.2716 — -.1783 .1753 .2802 .4629 .1986	-.2169 -.2403 -.2831 — -.1973 .1105 .1807 .3755 .1534	-.1745 -.2261 -.2657 — -.2022 .0639 .0677 .2584 .0639	-.1658 -.1620 -.2323 — -.1815 .0371 .0176 .1698 .0059	-.1792 -.1238 -.1989 — -.1515 .0265 .0289 .0976 .0566	-.1979 -.1461 -.1501 — -.1700 .0625 .0784 .0051 .1223	-.1657 -.1228 -.1111 — .1384 .0564 .0994 .0525 .1463
9.03	1.50	0 90 180	-.2058 .1817 1.6612	.1014 .1908 1.6248	-.0180 .2548 1.4045	-.0593 .2902 1.2036	-.0371 .3065 .9662	.0462 .3625 .7620	.0091 .5984 .5984—	.0099 .0959 .1739
9.59		0 45 90 135 180	-.2547 -.2291 .0435 .8574 1.5641	-.0734 -.1395 .1364 .8087 1.2362	-.0882 -.0805 .1729 .7185 1.0303	-.0951 -.1268 .1949 .6158 .8304	-.0761 -.1347 .2674 .5289 .6812	-.0487 -.1041 .3546 .4535 .5563	-.0187 -.0943 .1724 .3715 .4312	-.0017 .0212 -.0017 .0490 .0646
10.76		0 45 90 135 180	-.2511 -.2430 .0524 .8309 1.5066	-.1745 -.2173 — .4162 .7348	-.1817 -.2090 — .3521 .5705	-.1785 -.2022 — .2823 .4252	-.1502 -.1658 — .1894 .2908	-.1120 -.1317 — .1055 .1451	-.0784 -.1183 — .0107 .0027	-.0096 -.0212 — .0408 .0330

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(c)  $M = 2.85$ 

$x$ , in.	$r$ , in.	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			0°	5°	10°	15°	20°	25°	30°	35°
-1.01	.00	0	1.6726	1.6687	1.6269	1.5823	1.5031	1.4144	1.3066	1.1862
-.77	2.07	0	1.5867	1.5155	1.4061	1.2925	1.1649	1.0323	.8883	.7405
		90	1.5682	1.5521	1.5227	1.4714	1.3986	1.3158	1.2144	1.0748
		180	1.5744	1.6257	1.6760	1.6935	1.6815	1.6670	1.6203	1.5577
-.09	3.93	0	1.1384	1.0620	.9708	.8976	.7836	.6624	.5316	.4061
		45	1.1262	1.0804	1.0015	.9285	.8327	.7425	.6237	.5053
		90	1.1322	1.1294	1.0935	1.0581	1.0173	.9582	.8760	.7899
		135	1.1322	1.1784	1.2099	1.2554	1.2817	1.2973	1.3004	1.2853
		180	1.1322	1.2030	1.2712	1.3357	1.4110	1.4883	1.5525	1.6073
.36		15	-.1217	-.0982	-.1074	-.1238	-.1153	-.1240	-.1221	-.1221
		45	-.1480	-.1209	-.1401	-.1433	-.1448	-.1499	-.1547	-.1481
		90	-.0593	-.0411	-.0594	-.0649	-.0591	-.0464	-.0528	-.0520
		135	-.1206	-.1023	-.1268	-.1388	-.1452	-.1327	-.1266	-.1079
		180	-.1206	-.1147	-.1330	-.1512	-.1512	-.1265	-.0959	-.0396
2.29		0	-.1529	-.1145	-.1352	-.1433	-.1416	-.1484	-.1513	-.1530
		45	-.1480	-.1273	-.1352	-.1433	-.1480	-.1516	-.1498	-.1546
		90	-.1268	-.1147	-.1390	-.1512	-.1512	-.1389	-.1329	-.0955
		135	-.1268	-.1147	-.1390	-.1512	-.0897	-.0279	-.0087	-.0594
		180	-.1328	-.1207	-.1268	-.1018	-.0466	-.0213	-.0101	-.1832
4.51		0	-.1512	-.1258	-.1352	-.1499	-.1431	-.1484	-.1351	-.1334
		45	-.1480	-.1290	-.1416	-.1450	-.1431	-.1516	-.1481	-.1466
		90	-.1268	-.1147	-.1390	-.1450	-.1431	-.1516	-.1481	-.1466
		135	-.1268	-.1147	-.1208	-.0957	-.0651	-.1020	-.0959	-.0955
		180	-.1328	-.1147	-.1023	-.0649	-.0282	-.0153	-.0702	-.1214
6.61		0	-.1447	-.1145	-.1287	-.1433	-.1351	-.1386	-.1432	-.1466
		45	-.1381	-.1290	-.1368	-.1462	-.1480	-.1533	-.1481	-.1481
		90	-.1268	-.1207	-.1083	-.1142	-.1082	-.1142	-.1144	-.1079
		135	-.1146	-.1023	-.0777	-.0771	-.0651	-.0464	-.0221	-.0100
		180	-.1206	-.0839	-.0594	-.0463	-.0282	-.0090	-.0440	-.1400
6.93		0	-.1283	-.1145	-.1287	-.1433	-.1334	-.1369	-.1417	-.1449
		45	-.1349	-.1209	-.1401	-.1465	-.1399	-.1467	-.1513	-.1466
		90	-.1206	-.1023	-.0594	-.0771	-.0959	-.1020	-.0959	-.1079
		135	-.1146	-.0963	.0510	.0401	.0764	.0707	.1010	.1460
		180	-.1083	-.0717	.1430	.1635	.2238	.2679	.3408	.4495
8.56		0	-.0216	-.0999	-.0976	-.1157	-.1153	-.1240	-.1319	-.1368
		15	-.0233	-.1031	-.1042	-.1368	-.1465	-.1516	-.1481	-.1498
		45	-.0233	-.0999	-.1221	-.1304	-.1317	-.1353	-.1334	-.1400
		75	-.0250	-.1047	-.1238	-.1368	-.1448	-.1484	-.1513	-.1466
		90	-.0284	-.0655	-.0103	-.0525	-.0837	-.0895	-.0836	-.0769
		105	-.0224	-.0227	-.0163	-.0833	-.0577	-.0769	-.0887	-.1214
		135	-.0284	-.0227	-.0632	-.0647	-.0764	-.0892	-.1378	.1956
		165	-.0224	.0079	.0939	.1018	.1379	.1940	.2733	.4061
		180	-.0224	.0263	.0694	.0833	.1193	.1693	.2608	.4123
9.03	1.50	0	-.0741	-.0723	-.1059	-.1281	-.1334	-.1369	-.1368	-.1351
		90	-.0741	-.1062	-.1206	-.1368	-.1431	-.1484	-.1449	-.1466
		180	-.0709	-.1079	-.1140	-.1336	-.1351	-.1321	-.1319	-.1107
9.59		0	-.0348	-.0627	-.0732	-.0814	-.1006	-.1110	-.1238	-.1351
		45	-.0546	-.0788	-.0993	-.1189	-.1253	-.1304	-.1334	-.1400
		90	-.0346	-.0779	-.1083	-.1266	-.1328	-.1080	-.0959	-.1017
		135	-.0468	-.0717	-.1023	-.1142	-.1021	-.0588	-.0283	.0222
		180	-.0346	-.0411	-.0348	-.0340	-.0087	-.0398	.1195	.2266
10.76		0	.0277	-.0432	-.0472	-.0702	-.0991	-.1174	-.1302	-.1400
		45	.0177	-.0578	-.0749	-.1010	-.1153	-.1255	-.1302	-.1400
		90	.0083	-.0411	-.1023	-.1204	-.1144	-.1020	-.1081	-.0955
		135	.0083	-.0227	-.0288	-.0463	-.0344	-.0156	-.0332	-.1028
		180	.0145	-.0043	.0143	.0154	.0517	.1076	.1870	.3132

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(c) M = 2.85 - Continued

x, in.	r, in.	$\theta$ , deg	$C_p$ at $\alpha$ of:							
			40°	45°	50°	55°	60°	65°	70°	75°
-1.01	.00	0	1.0588	.9255	.7902	.6247	.5038	.3998	.3078	.2377
-0.77	2.07	0	.6245	.4862	.3814	.2860	.1915	.1119	.0569	.0032
		90	.9719	.8574	.7159	.5817	.4488	.3446	.2528	.1574
		180	1.4806	1.3773	1.2610	1.1113	.9569	.8223	.6816	.5401
-0.09	3.93	0	.3018	.2077	.1276	.0705	.0139	-.0351	-.0717	-.0895
		45	.3949	.3006	.2206	.1382	.0629	.0139	-.0411	-.0710
		90	.7114	.6285	.5363	.4400	.3446	.2650	.1916	.1451
		135	1.3008	1.2659	1.2362	1.1422	1.0795	.9937	.8775	.7500
		180	1.6668	1.7114	1.7254	1.6779	1.6306	1.5264	1.3674	1.1883
.36		15	-.1126	-.1123	-.1061	-.1333	-.1271	-.1175	-.1203	-.1152
		45	-.1466	-.1352	-.1288	-.1661	-.1515	-.1515	-.1498	-.1398
		90	-.0456	-.0275	-.0210	-.0343	-.0289	-.0167	-.0323	-.0588
		135	-.0952	.0222	.1214	.1382	.2710	.4916	.7182	.7562
		180	.0289	.2944	.4496	.4647	.7977	1.2081	1.5328	1.5958
2.29		0	-.1417	-.1352	-.1288	—	—	—	—	—
		45	-.1417	-.1384	-.1305	-.1595	-.1564	-.1417	-.1415	-.1398
		90	-.0766	-.0521	-.0396	-.0466	-.0351	-.0167	-.0043	.0155
		135	.1094	.1830	.2577	.2922	.3690	.4672	.5162	.5834
		180	.2771	.3995	.5611	.7048	.8529	1.0059	1.1409	1.2686
4.51		0	-.1305	-.1304	-.1273	-.1546	-.1515	-.1434	-.1498	-.1432
		45	-.1417	-.1336	-.1256	-.1578	-.1498	-.1451	-.1449	-.1366
		90	-.0890	-.0769	-.0582	-.0588	-.0473	-.0351	-.0289	-.0093
		135	.0537	.1149	.1896	.2368	.3018	.3692	.4426	.5341
		180	.2149	.3376	.4867	.6187	.7304	.8651	1.0245	1.1450
6.61		0	-.1368	-.1287	-.1190	-.1512	-.1532	-.1483	-.1515	-.1447
		45	-.1402	-.1336	-.1239	-.1512	-.1483	-.1500	-.1530	-.1432
		90	-.0952	-.0769	-.0582	-.0466	-.0351	-.0105	.0017	.0217
		135	.0723	.1768	.3011	.3723	.4732	.6018	.6938	.8055
		180	.2337	.4552	.7221	.8773	1.0671	1.2999	1.4408	1.6513
6.93		0	-.1336	-.1255	-.1175	-.1480	-.1417	-.1451	-.1481	-.1317
		45	-.1402	-.1319	-.1224	-.1497	-.1449	-.1466	-.1530	-.1432
		90	-.0952	-.0645	-.0498	-.0343	-.0227	.0017	.0079	.0217
		135	.2087	.3068	.4000	.4647	.5774	.6814	.7489	.8365
		180	.5997	.7833	.9885	1.1606	1.3856	1.5388	1.6552	1.8364
8.56		0	-.1321	-.1238	-.1190	-.1463	-.1188	-.1402	-.1383	-.1349
		15	-.1368	-.1287	-.1207	-.1463	-.1494	-.1532	-.1530	-.1398
		45	-.1321	-.1221	-.1158	-.1497	-.1368	-.1417	-.1415	-.1268
		75	-.1402	-.1319	-.1239	-.1497	-.1434	-.1500	-.1530	-.1447
		90	-.0642	-.0459	-.0148	-.0096	.0017	.0263	.0201	.0340
		105	.1716	.2511	.3628	.4030	.4426	.4426	.4120	.3982
		135	.3080	.4430	.5920	.6309	.6998	.7855	.7795	.7810
		165	.5997	.8514	1.0752	1.1729	1.2755	1.3794	1.3552	1.3241
		180	.6121	.8760	1.0690	1.2038	1.4100	1.5572	1.5204	1.4662
9.03	1.50	0	-.1256	-.1255	-.1207	-.1414	-.1434	-.1466	-.1432	-.1349
		90	-.1385	-.1336	-.1190	-.1267	-.0912	-.0817	-.0503	-.0535
		180	-.0770	-.0440	-.0218	-.0119	.0634	.0871	.1276	.2305
9.59		0	-.1273	-.1221	-.1190	-.1235	-.1271	-.1288	-.1335	-.1268
		45	-.1288	-.1304	-.1321	-.1316	-.1368	-.1417	-.1400	-.1285
		90	-.0890	-.0645	-.0396	-.0343	-.0289	-.0227	-.0215	-.0215
		135	.0908	.1582	.2020	.2060	.3078	.3446	.3078	.3858
		180	.3454	.4862	.6787	.8773	1.1223	1.1347	1.2878	1.6203
10.76		0	-.1321	-.1368	-.1305	-.1299	-.1400	-.1368	-.1415	-.1349
		45	-.1336	-.1319	-.1239	-.1299	-.1351	-.1368	-.1366	-.1285
		90	-.0890	-.0521	-.0086	-.0219	-.0045	.0201	.0323	.0525
		135	.1840	.3006	.4248	.4462	.5100	.6448	.6876	.7562
		180	.4818	.6841	.8770	.9574	1.0855	1.2939	1.3184	1.4229

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(c) M = 2.85 - Continued

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:							
			80°	85°	95°	100°	105°	110°	115°	120°
-1.01	.00	0	.1808	.1262	-.0494	-.0817	-.1059	-.1162	-.1289	-.1417
-0.77	2.07	0 90 180	-.0405 .0886 .4208	-.0772 .0213 .2678	-.1179 -.0138 .1020	-.1174 -.0320 .0591	-.1122 -.0699 .0217	-.1048 -.0750 .0655	-.1201 -.0894 .1134	-.1353 -.0801 .1183
-0.09	3.93	0 45 90 135 180	-.1144 -.0960 .0946 .5929 .8943	-.1328 -.1143 .0584 .2616 .3787	-.1257 -.1318 -.1121 -.0832 .0210	-.1211 -.1225 -.1183 -.1040 .0320	-.1149 -.1225 -.1326 -.1277 .0796	-.1162 -.1302 -.1183 -.1327 .1183	-.1252 -.1442 -.1134 -.1326 .1423	-.1353 -.1417 -.0944 -.1136 .1280
.36		0 15 45 90 135 180	-.1240 -.1435 .0394 .7712 1.6630	-.1105 -.1399 -.0034 .7732 1.6914	-.1287 -.1241 -.0080 .7966 1.6997	-.1149 -.1161 .0254 .8166 1.6558	-.1149 -.1186 .0312 .8019 1.5967	-.1098 -.1226 .0546 .8325 1.5528	-.1264 -.1264 .0788 .8333 1.5061	-.1302 -.1277 .1164 .8781 1.4913
2.29		45 90 135 180	-.1403 .0147 .6605 1.3985	-.1384 .0275 .7361 1.5002	-.1226 .0210 .8024 1.6475	-.1174 .0543 .8647 1.6845	-.1174 .0601 .8838 1.6882	-.1187 .0786 .9094 1.6873	-.1252 .0788 .9102 1.6598	-.1277 .1212 .9356 1.6351
4.51		0 45 90 135 180	-.1452 -.1403 .0209 .6174 1.2879	-.1350 -.1335 .0337 .7238 1.4264	-.1150 -.1241 .0441 .8255 1.5954	-.1149 -.1186 .0783 .8886 1.6509	-.1186 -.1211 .0650 .9271 1.6766	-.1175 -.1226 .0930 .9478 1.6921	-.1277 -.1302 .1029 .9582 1.6638	-.1314 -.1289 .1403 .9835 1.6638
6.61		0 45 90 135 180	-.1403 -.1403 .0394 .8326 1.6630	-.1335 -.1416 .0337 .8348 1.6729	-.1059 -.1241 .0383 .8429 1.6764	-.0931 -.1225 .0638 .8789 1.6845	-.1034 -.1275 .0601 .8838 1.6786	-.0896 -.1187 .0979 .9142 1.6777	-.0960 -.1353 .1221 .9197 1.6790	-.0935 -.1366 .1595 .9692 1.7117
6.93		0 45 90 135 180	-.1403 -.1435 .0332 .8511 1.8167	-.1301 -.1367 .0275 .8470 1.7838	-.1241 -.1257 .0152 .8487 1.7344	-.1186 -.1236 .0446 .8789 1.7132	-.1236 -.1275 .0504 .8742 1.6882	-.1187 -.1277 .0835 .8950 1.6729	-.1353 -.1366 .1076 .9102 1.6645	-.1277 -.1403 .1307 .9451 1.6925
8.56		0 15 45 75 90 105 135 165 180	-.1337 -.1435 -.1386 -.1435 .0332 .3961 .7959 1.3246 1.4353	-.1252 -.1384 -.1286 -.1399 .0337 .4342 .8039 1.3647 1.4818	-.1318 -.1287 -.1318 -.1376 .0369 .5187 .9008 1.4797 1.6417	-.1351 -.1390 -.1376 -.0602 .0369 .5816 .9510 1.5119 1.6845	-.1339 -.1339 -.1326 -.0464 .0225 .5947 .9560 1.5051 1.6882	-.1341 -.1162 -.1277 -.0650 .0314 .5876 .9718 1.4905 1.6634	-.1505 -.1530 -.1454 -.0606 .0065 .0065 .6170 .9197 1.4484 1.5829	-.1493 -.1392 -.1392 -.0513 .0077 .0077 .6433 .9830 1.3476 1.4530
9.03	1.50	0 90 180	-.1304 .1338 .4272	-.1186 .2243 .7630	-.1333 .2293 1.1034	-.1097 .2317 1.3104	-.1149 .1951 1.4714	-.1073 .1939 1.6729	-.0782 .2181 1.6886	-.0656 .2936 1.7548
9.59		0 45 90 135 180	-.1223 -.1223 .0209 .9435 1.8721	-.1137 -.1154 .0397 .9579 1.8083	-.1363 -.1378 .0210 .8834 1.7460	-.1314 -.1390 .0446 .8981 1.7229	-.1339 -.1376 .0360 .8838 1.6978	-.1302 -.1353 .0594 .8806 1.6826	-.1264 -.1264 .0644 .8861 1.6550	-.1163 -.1188 .0972 .9164 1.6351
10.76		0 45 90 135 180	-.1321 -.1321 .0701 .8204 1.5646	-.1269 -.1252 .0584 .8410 1.6236	-.1470 -.1470 .0325 .8718 1.6822	-.1454 -.1518 .0543 .8934 1.6990	-.1376 -.1491 .0409 .8983 1.6930	-.1391 -.1403 .0594 .9094 1.6826	-.1341 -.1417 .0452 .8813 1.6309	-.1302 -.1277 .0636 .8541 1.5536

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued  
(c) M = 2.85 - Concluded

x, in.	r, in.	\\$, deg	C <sub>p</sub> at \alpha of:							
			125°	150°	155°	160°	165°	170°	175°	180°
-1.01	.00	0	-.1366	—	—	—	—	—	—	—
-.77	2.07	0	-.1314	-.1314	-.1478	-.1428	-.1447	-.1332	-.1330	-.1349
		90	-.0801	-.1363	-.1495	-.1428	-.1463	-.1315	-.1315	-.1366
		180	-.1185	-.1412	-.1527	-.1462	-.1512	-.1364	-.1347	-.1283
-.09	3.93	0	-.1417	-.1246	-.1429	-.1544	-.1381	-.1398	-.1364	-.1283
		45	-.1392	-.1380	-.1412	-.1510	-.1463	-.1347	-.1364	-.1266
		90	-.1090	-.1314	-.1478	-.1527	-.1413	-.1315	-.1233	-.1283
		135	-.1137	-.1461	-.1461	-.1478	-.1447	-.1281	-.1298	-.1201
		180	-.1280	-.1346	-.1478	-.1478	-.1463	-.1281	-.1265	-.1186
.36		0	-.1328	—	—	—	—	—	—	—
		45	-.1201	-.0682	-.0377	-.0563	-.1623	-.2482	-.3533	-.4664
		90	-.1589	.3246	.3954	.4546	.4377	.4478	.4404	.4726
		135	.9004	1.1610	1.0924	.9853	.8512	.6783	.5462	.4290
		180	1.4601	1.5475	1.3938	1.1851	.9889	.7159	.5276	.3728
2.29		0	—	.0015	-.0377	-.0675	-.0871	-.0985	.1417	.2418
		45	-.1201	-.0935	-.0943	-.0386	-.0433	.1047	.1541	.2232
		90	-.1399	—	.7158	.6356	.5318	.4040	.3097	.2418
		135	.9340	.7618	1.0170	.8916	.6821	.4976	.3409	.2356
4.51		0	-.1227	-.0049	.0250	.0613	.0871	.0861	.1105	.2106
		45	-.1201	-.0935	-.0817	-.0324	.0371	.1047	.1541	.2044
		90	-.1589	.1156	.1444	.1550	.1685	.1732	.1977	.2106
		135	.9866	—	.6969	.6232	.5130	.3728	.2725	.2170
		180	1.6228	1.3067	1.0485	.8354	.6821	.4790	.3161	.2106
6.61		0	-.0846	.0141	.0501	.0675	.0559	.0299	.0607	.1173
		45	-.1328	-.1252	-.0879	-.0198	.0056	.0549	.1105	.1421
		90	-.1494	—	-.0302	-.0314	.0177	.0871	.0735	.1355
		135	1.0153	—	—	—	—	—	—	—
		180	1.7902	1.1356	.8602	.6606	.4815	.3168	.2163	.1421
6.93		0	-.1201	-.0492	-.0126	.0177	.0245	-.0013	.0295	.0673
		45	-.1378	-.1316	-.0879	-.0572	-.0632	-.0387	.0109	.0735
		90	-.1112	—	—	—	—	—	—	—
		135	.9577	.3246	.2698	.1986	.1309	.0861	.0545	.0299
		180	1.6849	—	—	—	—	—	—	—
8.56		0	-.1493	-.1125	-.0879	-.0510	-.0568	-.0761	-.0701	-.0387
		15	-.1543	-.1568	-.1256	-.1010	-.0632	-.0511	-.0327	-.0199
		45	-.1493	-.1632	-.1320	-.1134	-.0944	-.0761	-.0451	-.0199
		75	-.0611	—	—	—	—	—	—	—
		90	-.0993	-.0999	-.0817	-.0510	-.0506	-.0511	-.0389	-.0325
		105	-.1494	.1536	.1318	.1114	.0433	.0425	.0077	.0113
		135	.8335	.2106	.1757	.1300	.0683	.0175	-.0077	-.0575
		165	1.1253	.4387	.3642	.2549	.1559	.0611	.0171	-.0199
		180	1.1683	.3246	.2887	.2048	.1121	.0425	.0141	-.0325
9.03	1.50	0	-.0465	.0205	.0689	.0427	.0245	.0549	.0857	.1297
		90	.3025	.1091	.1883	.2985	.3501	.3978	.3906	.1732
		180	1.8858	1.6046	1.3562	1.0101	.7635	.5911	.4280	.3542
		—	—	—	—	—	—	—	—	—
9.59		0	-.1073	.0270	.0439	.0427	.0433	.0487	.0857	.1109
		45	-.1073	-.0618	.0000	-.0011	.0056	-.0013	.0669	.1047
		90	-.1255	.0396	.1444	.1488	.3062	.2356	.1977	.1109
		135	.9530	.5591	.6090	.4797	.4879	.3728	.3844	.2044
10.76		0	-.1264	-.0682	-.0188	-.0135	-.0194	-.0075	.0171	.0549
		45	-.1238	-.1316	-.0879	-.0572	-.0506	-.0387	-.0203	.0487
		90	.0489	—	—	—	—	—	—	—
		135	.7856	.3056	.2636	.2237	.1811	.1173	.0669	.0361
		180	1.4457	.5972	.4519	.3610	.2500	.1484	.0545	-.0263

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(d) M = 3.94

x, in.	r, in.	$\beta$ , deg	$C_p$ at $\alpha$ of:							
			0°	5°	10°	15°	20°	25°	30°	35°
-1.01	.00	0	1.7561	1.7623	1.7036	1.6565	1.5742	1.4805	1.3593	1.2093
-.77	2.07	0	1.6578	1.5750	1.4635	1.3457	1.2018	1.0653	.9257	.7725
	90	1.6043	1.6106	1.5701	1.5233	1.4589	1.3658	1.2529	1.1571	1.0551
	180	1.6220	1.6999	1.7301	1.7628	1.7601	1.7458	1.6865		
-.09	3.93	0	1.1846	1.1382	1.0369	.9376	.8296	.6943	.5541	.4339
	45	1.1757	1.1382	1.0545	.9730	.8916	.7738	.6512	.5497	
	90	1.1846	1.1917	1.1790	1.1238	1.0689	1.0123	.9433	.8439	
	135	1.1667	1.2362	1.2767	1.3014	1.3436	1.3482	1.3593	1.3877	1.4744
	180	1.1846	1.2718	1.3390	1.4167	1.4854	1.5690			
.36		15	-.0448	-.0236	-.0357	-.0376	-.0544	-.0428	-.0447	-.0284
		45	-.0801	-.0709	-.0850	-.1039	-.0920	-.0945	-.1039	-.0709
		90	-.0027	-.0239	-.0146	-.0143	-.0143	-.0406	-.0319	-.0238
		135	-.0741	-.0652	-.0652	-.0742	-.0566	-.0479	-.0479	-.0384
		180	-.0741	-.0831	-.0831	-.0742	-.0566	-.0390	-.0300	-.0238
2.29		0	-.0874	-.0733	-.0755	-.0896	-.0920	-.0874	-.0966	-.0755
	45	-.0850	-.0733	-.0850	-.0920	-.0874	-.0874	-.0945	-.0945	-.0826
	90	-.0831	-.0741	-.0831	-.0831	-.0655	-.0566	-.0566	-.0566	-.0384
	135	-.0831	-.0741	-.0831	-.0742	-.0300	-.0141	-.0319	-.0685	-.1665
	180	-.0831	-.0652	-.0831	-.0476	-.0143	-.0582	-.1115		
4.51		0	-.0801	-.0733	-.0780	-.0780	-.0920	-.0804	-.0826	-.0709
	45	-.0825	-.0733	-.0850	-.0966	-.0945	-.0966	-.0896	-.0896	-.0731
	90	-.0831	-.0831	-.0831	-.0742	-.0390	-.0300	-.0390	-.0390	-.0384
	135	-.0831	-.0741	-.0652	-.0387	-.0211	-.0051	-.0141	-.0149	-.0149
	180	-.0920	-.0652	-.0476	-.0211	-.0143	-.0406	-.0671	-.1218	
6.61		0	-.0638	-.0709	-.0685	-.0780	-.0780	-.0780	-.0874	-.0660
	45	-.0730	-.0709	-.0826	-.0920	-.0874	-.0945	-.0896	-.0731	
	90	-.0831	-.0652	-.0566	-.0566	-.0476	-.0390	-.0479	-.0479	-.0474
	135	-.0831	-.0475	-.0476	-.0298	-.0211	-.0038	-.0035	-.0149	-.1129
	180	-.0741	-.0296	-.0208	-.0032	-.0233	-.0493	-.0671		
6.93		0	-.0565	-.0518	-.0639	-.0685	-.0709	-.0731	-.0731	-.0639
	45	-.0684	-.0638	-.0780	-.0874	-.0896	-.0920	-.0850	-.0731	
	90	-.0831	-.0385	-.0298	-.0476	-.0390	-.0390	-.0566	-.0566	-.0384
	135	-.0741	-.0030	-.0032	-.0122	-.0054	-.0406	-.0761	-.1307	
	180	-.0741	-.0328	-.0235	-.0322	-.0674	-.1112	-.2176	-.4071	
8.56		0	.0285	-.0307	-.0474	-.0566	-.0639	-.0685	-.0731	-.0330
	15	.0307	-.0377	-.0685	-.0780	-.0920	-.0874	-.0896	-.0639	
	45	.0356	-.0119	-.0474	-.0614	-.0614	-.0614	-.0636	-.0520	
	75	.0307	-.0095	-.0593	-.0801	-.0896	-.0850	-.0801	-.0731	
	90	-.0117	.0239	.0057	-.0211	-.0300	-.0300	-.0300	-.0208	
	105	.0062	.0774	.0858	.0766	.0498	.0493	.0585	.0863	
	135	.0062	.0774	.0590	.0677	.0674	.1023	.1115	.2022	
	165	.0062	.0774	.0858	.0945	.1207	.1730	.2265	.4160	
	180	-.0027	.0594	.0590	.0855	.1118	.1554	.2176	.4160	
9.03	1.50	0	-.0402	-.0119	-.0474	-.0660	-.0709	-.0709	-.0685	-.0614
	90	-.0494	-.0518	-.0755	-.0826	-.0896	-.0850	-.0920	-.0614	
	180	-.0377	-.0356	-.0498	-.0590	-.0639	-.0590	-.0520	-.0355	
9.59		0	.0071	.0046	-.0171	-.0330	-.0449	-.0544	-.0590	-.0639
	45	-.0117	-.0119	-.0311	-.0541	-.0568	-.0520	-.0520	-.0614	
	90	-.0206	-.0296	-.0566	-.0566	-.0566	-.0390	-.0390	-.0384	
	135	-.0296	-.0385	-.0652	-.0566	-.0566	-.0390	-.0211	-.0506	
	180	-.0296	-.0117	-.0119	-.0057	-.0143	-.0227	-.0761	-.2111	
10.76		0	.0497	.0375	.0111	-.0330	-.0568	-.0685	-.0636	-.0685
	45	.0402	.0304	-.0171	-.0471	-.0568	-.0544	-.0636	-.0614	
	90	.0152	-.0206	-.0566	-.0566	-.0566	-.0390	-.0479	-.0384	
	135	.0152	.0060	-.0119	-.0211	-.0035	-.0227	-.0495	-.1129	
	180	.0152	.0328	.0057	.0233	.0498	.0847	.1556	.3002	

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued  
(d) M = 3.94 - Continued

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:							
			40°	45°	50°	55°	60°	65°	70°	75°
-1.01	.00	0	1.0989	.9588	.8136	.6531	.5448	.4661	.4056	.3336
-.77	2.07	0 90 180	.6602 1.0274 1.5558	.5456 .8600 1.4347	.4102 .7329 1.3068	.2983 .5554 1.1057	.2087 .4387 .9341	.1471 .3420 .8024	.0855 .2633 .6719	.0499 .1740 .5467
-.09	3.93	0 45 90 135 180	.3467 .4452 .7587 1.3766 1.8154	.2671 .3391 .6713 1.3540 1.8389	.1591 .2576 .5174 1.2889 1.8448	.1121 .1653 .4580 1.1499 1.6909	.0406 .0761 .3592 1.0754 1.6237	.0231 .0407 .2799 .9884 1.5023	-.0119 .0057 .2188 .8763 1.3470	-.0212 .0212 .1564 .7329 1.1143
.36		15 45 90 135 180	-.0214 -.0731 .0512 .0065 .1140	-.0212 -.0709 .0698 .0698 .2671	-.0258 -.0684 .0513 .1412 .2934	-.0426 -.0825 .0589 .1653 .3605	-.0290 -.0874 .0495 .2617 .7836	-.0239 -.0687 .0586 .4395 1.1038	-.0220 -.0711 .0855 .6542 1.4803	-.0361 .0711 .1032 .7416 1.6464
2.29		0 45 90 135 180	-.0731 -.0731 .0114 .1140 .2661	-.0730 -.0709 .0068 .1504 .3749	-.0709 -.0779 .0114 .2307 .5714	-.0825 .0233 .0230 .2717 .6708	-.0804 .0230 .3502 .4395 .8366	-.0687 .0497 .5209 .3773 1.0150	-.0711 .0768 .5910 .4677 1.1428	-.0733 .0852 .5910 .5644 1.2826
4.51		0 45 90 135 180	-.0660 -.0685 -.0292 .0693 .2125	-.0684 -.0684 -.0201 .1146 .3391	-.0709 -.0730 -.0024 .3024 .4818	-.0755 -.0825 .0054 .2538 .5910	-.0734 -.0826 .0141 .2972 .7395	-.0616 -.0709 .0407 .3773 .8912	-.0641 -.0687 .0502 .4577 1.0362	-.0850 .0757 .0766 .5644 1.1852
6.61		0 45 90 135 180	-.0639 -.0685 -.0292 .0872 .2214	-.0660 -.0709 -.0111 .1865 .4110	-.0613 -.0709 .0114 .2934 .7150	-.0592 -.0850 .0054 .3426 .7951	-.0780 -.0804 .0230 .3502 .7305	-.0567 -.0687 .0497 .5722 1.2455	-.0641 -.0687 .0768 .7074 1.4803	-.0711 -.0687 .1032 .8214 1.7262
6.93		0 45 90 135 180	-.0614 -.0685 -.0292 .2035 .5795	-.0613 -.0709 -.0111 .3032 .8060	-.0660 -.0709 .0155 .3833 1.0378	-.0592 -.0779 .0320 .4669 1.2563	-.0522 -.0804 .0230 .6510 1.6768	-.0475 -.0709 .0673 .7229 1.6882	-.0524 -.0665 .0855 .7785 1.7023	-.0641 -.0733 .1208 .9192 2.0012
8.56		0 15 45 75 90 105 135 165 180	-.0568 -.0639 -.0568 -.0731 .0154 .1586 .3557 .6780 .7229	-.0613 -.0684 -.0589 -.0684 .0337 .2671 .5367 .1.0397 .1.0576	-.0613 -.0684 -.0589 -.0709 .0423 .3833 .6971 .2889 .2441	-.0592 -.0779 -.0521 -.0779 .0766 .4313 .7329 .1.3361 .1.3451	-.0568 -.0758 -.0522 -.0804 .0850 .4563 .8456 .1.6237 .1.9068	-.0451 -.0638 -.0432 -.0733 .1.029 .4305 .8114 .1.4580 .1.4667	-.0524 -.0687 -.0432 -.0665 .1.034 .4408 .8051 .1.3825 .1.4537	-.0570 -.0711 -.0478 -.0804 .1.208 .4400 .8127 .1.3804 .1.4957
9.03	1.50	0 90 180	-.0520 -.0614 -.0027	-.0613 -.0638 .0190	-.0613 -.0638 .0261	-.0546 -.0475 .0394	-.0593 -.0476 .0647	-.0451 -.0217 .0863	-.0499 .0060 .1433	-.0499 .0668 .2557
9.59		0 45 90 135 180	-.0520 -.0590 .0065 .1497 .3467	-.0613 -.0660 .0247 .2402 .5367	-.0613 -.0638 .0244 .2666 .7598	-.0709 -.0684 .0589 .3692 .8483	-.0663 -.0687 .0761 .3059 .8012	-.0475 -.0451 .0586 .3241 .9265	-.0548 -.0451 .0589 .2989 1.0717	-.0641 -.0665 .0676 .3249 1.6820
10.76		0 45 90 135 180	-.0660 -.0639 -.0114 .2393 .5616	-.0730 -.0660 .0157 .3570 .8149	-.0730 -.0709 .0334 .3923 .7956	-.0755 -.0684 .0499 .4224 .9458	-.0804 -.0734 .0406 .5359 1.1373	-.0567 -.0451 .0673 .6431 1.2455	-.0641 -.0665 .0855 .6808 1.2938	-.0757 -.0733 .1474 .7861 1.4691

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued  
(d) M = 3.94 - Continued

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:							
			80°	85°	90°	100°	105°	110°	115°	120°
-1.01	.00	0	.2975	.2628	.0136	.0185	-.0095	-.0217	-.0043	-.0319
-.77	2.07	0	.0141	.0054	-.0695	-.0418	-.0544	-.0644	-.0544	-.0620
	90	.0939	.0499	.1811	.2093	.1711	.2173	.1705	.1786	
	180	.4039	.2717	.0681	.0304	-.0076	-.0076	-.0452	.0360	
-.09	3.93	0	-.0478	-.0478	-.0744	-.0366	-.0495	-.0593	-.0444	-.0620
	45	-.0301	-.0478	-.0695	-.0494	-.0644	-.0568	-.0495	-.0720	
	90	.1116	.0676	-.0543	-.0451	-.0734	-.0452	-.0734	-.0268	
	135	.5543	.2894	---	---	---	---	---	---	
	180	.8290	.5022	---	---	---	---	---	---	
.36		15	-.0423	-.0377	-.0668	-.0366	-.0471	-.0593	-.0444	-.0696
		45	-.0966	-.0850	-.0619	-.0318	-.0471	-.0669	-.0568	-.0696
		90	.0850	.0499	.0117	.0586	.0677	.0769	.0579	.1505
		135	.7669	.7859	.7652	.8217	.8285	.8550	.8269	.8970
		180	1.7056	1.7615	1.7072	1.6977	1.6172	1.5956	1.5393	1.5130
2.29		45	-.0945	-.0804	-.0594	-.0366	-.0471	-.0541	-.0444	-.0571
		90	.1029	.1208	.1059	.1341	.1334	.1800	.1610	.1786
		135	.6697	.7327	.8122	.8877	.9035	.9113	.9300	.9530
		180	1.4224	1.5310	1.6412	1.7164	1.7111	1.7268	1.6613	1.6808
4.51		0	-.0779	-.0804	-.0494	-.0266	-.0395	-.0468	-.0368	-.0471
		45	-.0920	-.0779	-.0567	-.0318	-.0395	-.0593	-.0444	-.0471
		90	.0939	.1298	.1151	.1528	.1145	.1987	.1987	.2439
		135	.6341	.7506	.8594	.9064	.9598	.9863	.9674	1.0090
		180	1.3071	1.4689	1.6035	1.7072	1.7206	1.7363	1.7082	1.6903
6.61		0	-.0825	-.0684	-.0442	-.0217	-.0344	-.0417	-.0219	-.0246
		45	-.0896	-.0755	-.0543	-.0342	-.0495	-.0517	-.0420	-.0471
		90	.1205	.1298	.1059	.1528	.1521	.1800	.1892	.2252
		135	.9086	.9102	.9064	.9441	.9411	.9768	.9768	1.0837
		180	1.8120	1.8060	1.7354	1.7354	1.7488	1.7550	1.7268	1.8302
6.93		0	-.0730	-.0684	-.0366	-.0166	-.0219	-.0341	-.0244	-.0246
		45	-.0825	-.0779	-.0567	-.0266	-.0395	-.0541	-.0444	-.0520
		90	.1295	.1298	.0776	.1341	.1426	.1610	.1800	.2065
		135	.9265	.9189	.9064	.9346	.9411	.9582	.9582	1.0090
		180	2.0245	1.9656	1.8109	1.7919	1.7488	1.7550	1.7176	1.7834
8.56		0	-.0709	-.0589	-.0442	-.0242	-.0319	-.0392	-.0295	-.0395
		15	-.0850	-.0709	---	---	---	---	---	---
		45	-.0638	-.0518	---	---	---	---	---	---
		75	-.0850	-.0779	.0494	.0491	.0300	.0487	.0298	.0666
		90	.1382	.1384	.0399	.0586	.0582	.0674	.0206	.0200
		105	.4392	.4666	.5768	.6238	.6407	.6298	.5362	.3933
		135	.8024	.8214	.9346	.9819	.9787	.9863	.9205	.8596
		165	1.3516	1.4157	1.5470	1.6035	1.5985	1.5864	1.4738	1.3263
		180	1.4754	1.5131	1.6790	1.7542	1.7393	1.7082	1.5864	1.3915
9.03	1.50	0	-.0638	-.0518	-.0543	-.0217	-.0271	-.0141	-.0043	-.0146
		90	.1490	.2218	.3035	.3130	.2837	.2550	.2831	.3933
		180	.4300	.6678	1.1325	1.3774	1.5328	1.6895	1.7082	1.8116
9.59		0	-.0660	-.0518	-.0543	-.0318	-.0344	-.0392	-.0043	-.0271
		45	-.0660	-.0567	-.0619	---	---	---	-.0395	-.0371
		90	.0850	.1298	---	---	---	---	---	---
		135	.7316	1.0077	---	---	---	---	---	---
		180	2.0245	1.8326	1.8296	1.8201	1.7769	1.7363	1.6987	1.6903
10.76		0	-.0801	-.0709	-.0619	-.0442	-.0444	-.0517	-.0395	-.0447
		45	-.0801	-.0589	-.0619	-.0543	-.0271	-.0669	-.0219	-.0471
		90	.1737	.1564	.1151	.1151	.1334	.1237	.1413	
		135	.8556	.9012	.9159	.9441	.9222	.9205	.8832	.8596
		180	1.6260	1.7262	1.7259	1.7729	1.7674	1.7550	1.6705	1.5969

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(d)  $M = 3.94$  - Concluded

x, in.	r, in.	$\theta$ , deg	$C_p$ at $\alpha$ of:							
			125°	150°	155°	160°	165°	170°	175°	180°
-1.01	.00	0	-.0392	—	—	—	—	—	—	—
-1.77	2.07	0	-.0644	-.0706	-.0685	-.0850	-.0801	-.0780	-.0755	-.0734
		45	-.1727	-.0731	-.0755	-.0755	-.0801	-.0731	-.0660	-.0660
		90	—	-.0755	-.0755	-.0755	-.0780	-.0755	-.0660	-.0685
		135	—	—	—	—	—	—	—	—
		180	—	—	—	—	—	—	—	—
-1.09	3.93	0	-.0820	-.0706	-.0685	-.0780	-.0801	-.0801	-.0614	-.0734
		45	-.0796	-.0801	-.0801	-.0826	-.0826	-.0660	-.0709	—
		90	-.0636	-.0731	-.0755	-.0850	-.0850	-.0755	-.0614	—
		135	—	-.0660	-.0685	-.0706	-.0755	-.0660	-.0590	-.0614
		180	—	—	-.0660	-.0614	-.0660	-.0614	-.0568	-.0590
.36		15	-.0696	—	—	—	—	—	—	—
		45	-.0620	-.0114	.0152	.0420	.0869	.1765	.2555	.3638
		90	-.1727	.3378	.4087	.4355	.4352	.3735	.3714	.3816
		135	.9005	1.1614	1.0345	.8198	.7749	.6869	.4872	.3459
		180	1.4581	1.4213	1.1417	.7752	.6588	.5884	.4157	.2834
2.29		0	—	.0601	.0598	.0777	.0869	.1050	.1307	.1851
		45	-.0720	-.0292	-.0206	-.0027	.0420	.0780	.1307	.1673
		90	-.1822	—	—	—	—	—	—	—
		135	.9192	.7676	.7127	.6409	.5695	.4182	.2912	.1941
		180	1.6094	1.1704	.9985	.8466	.7571	.5346	.3267	.1941
4.51		0	-.0593	.0512	.0869	.0869	.0958	.1050	.1129	.1673
		45	-.0696	-.0114	-.0027	-.0027	.0687	.0872	.1307	.1494
		90	.2103	.1765	.1851	.1583	.1583	.1586	.1575	.1494
		135	.9760	.9108	.7573	.6231	.5427	.3557	.2376	.1494
		180	1.6470	1.3317	1.2221	.9181	.7392	.4720	.2823	.1583
6.61		0	-.0344	.0872	.1315	.1137	.0869	.0690	.0771	.1226
		45	-.0669	-.0292	-.0206	.0062	.0330	.0512	.0950	.1045
		90	.2103	.0422	.0241	.0241	.0777	.0780	.1218	.1045
		135	1.0515	1.0996	1.1525	.7841	.5248	.4084	.2661	.1665
		180	—	—	—	—	—	—	—	.1045
6.93		0	-.0444	.0333	.0420	.0420	.0330	.0333	.0506	.0420
		45	-.0696	-.0384	-.0295	-.0206	-.0206	-.0024	.0328	.0420
		90	.1537	—	—	—	—	—	—	—
		135	.9005	.2482	.2298	.1583	.1226	.0780	.0771	.0598
		180	1.6565	.6869	.4623	.3013	.2209	.1229	.0950	.0330
8.56		0	-.0593	-.0024	-.0027	.0062	-.0027	-.0024	.0060	.0241
		15	—	-.0652	-.0384	-.0295	-.0027	.0065	.0149	.0241
		45	—	-.0742	-.0563	-.0206	-.0206	-.0024	.0060	.0241
		75	.0309	—	—	—	—	—	—	—
		90	-.0541	-.0203	-.0027	-.0116	-.0027	.0065	.0149	.0152
		105	.0687	.1497	.1494	.1137	.0598	.0512	.0328	.0420
		135	.4940	.2393	.2209	.1583	.1047	.0512	.0328	—
		165	1.0515	.3914	.3908	.3102	.1941	.1050	.0595	.0152
		180	1.0610	.4184	.3727	.2923	.1583	.0872	.0506	.0062
9.03	1.50	0	.0060	.1050	.1405	.1315	.0869	.0961	.1218	.2477
		90	.4090	2.0630	1.6540	1.3652	.9628	.6677	.5078	.3535
		180	—	—	—	—	—	—	.3981	.3280
9.59		0	-.0244	.1318	.1226	.1047	.0869	.0961	.1307	.1494
		45	-.0344	.0244	.0420	.0687	.1047	.0690	.1218	.1494
		90	—	.1050	.1583	.2209	.3191	.3467	.2198	.1494
		135	—	.6242	.4980	.3816	.3995	.3197	.3446	.2209
		180	1.7228	1.0900	.8109	.5963	.4444	.3735	.3356	.2745
10.76		0	-.0392	.0333	.0509	.0509	.0509	.0512	.0771	.0598
		45	-.0244	-.0292	-.0206	-.0027	-.0027	.0244	.0417	.0598
		90	.1158	—	—	—	—	—	—	—
		135	.7681	.3199	.2745	.2209	.1941	.1407	.0950	.0687
		180	1.4391	.6063	.4802	.3727	.3013	.1943	.1129	.0420

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(e) M = 4.65

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:							
			0°	5°	10°	15°	20°	25°	30°	35°
-1.01	.00	0	1.8610	1.8237	1.7645	1.6924	1.6024	1.4680	1.3764	1.2648
-.77	2.07	0	1.7117	1.6122	1.4904	1.3556	1.2007	1.0563	9.409	.7879
		45	1.6870	1.6620	1.6149	1.5428	1.4516	1.3430	1.2394	1.1518
		90	1.6996	1.7493	1.8017	1.8048	1.8029	1.7546	1.6996	1.6288
-.09	3.93	0	1.2519	1.1649	1.0545	.9318	.7993	.6945	.5555	.4487
		45	1.2394	1.1896	1.0920	.9815	.8623	.7571	.6550	.5618
		90	1.2644	1.2394	1.2041	1.1562	1.1006	1.0188	.9534	.8757
		135	1.2644	1.2891	1.3286	1.3556	1.3890	1.3806	1.4137	1.3905
		180	1.2644	1.3389	1.4156	1.4805	1.5520	1.6176	1.6996	1.7544
+.36		15	-.0197	-.0034	-.0201	-.0065	-.0031	-.0095	.0171	.0237
		45	-.0695	-.0794	-.0695	-.0695	-.0695	-.0892	-.0695	-.0428
		90	-.0706	-.0581	-.0459	-.0463	-.0592	-.0585	-.0957	.0970
		135	-.0163	-.0289	-.0410	-.0535	-.0535	-.0285	-.0038	.0092
		180	-.0414	-.0414	-.0661	-.0661	-.0535	-.0285	.0209	.0722
2.29		0	-.0794	-.0695	-.0695	-.0794	-.0726	-.0759	-.0562	-.0393
		45	-.0725	-.0794	-.0627	-.0759	-.0695	-.0729	-.0695	-.0561
		90	-.0289	-.0414	-.0535	-.0661	-.0661	-.0410	-.0163	.0092
		135	-.0289	-.0414	-.0535	-.0535	-.0409	-.0038	.0581	.1222
		180	-.0289	-.0535	-.0410	-.0163	-.0092	.0585	.1329	.1726
4.51		0	-.0695	-.0562	-.0596	-.0695	-.0661	-.0759	-.0596	-.0462
		45	-.0627	-.0759	-.0759	-.0661	-.0626	-.0759	-.0661	-.0462
		90	-.0289	-.0535	-.0535	-.0410	-.0409	-.0285	-.0163	.0092
		135	-.0289	-.0414	-.0410	-.0410	-.0160	.0087	.0334	.0470
		180	-.0289	-.0289	-.0163	-.0163	-.0034	.0338	.0832	.1600
6.61		0	-.0661	-.0596	-.0497	-.0528	-.0596	-.0661	-.0494	-.0393
		45	-.0596	-.0627	-.0627	-.0725	-.0695	-.0729	-.0725	-.0462
		90	-.0289	-.0289	-.0410	-.0410	-.0535	-.0285	-.0163	-.0034
		135	-.0289	-.0289	-.0163	-.0163	-.0160	-.0038	.0334	.0596
		180	-.0289	-.0038	-.0038	-.0087	.0218	.0463	.0957	.1600
6.93		0	-.0395	-.0365	-.0365	-.0463	-.0428	-.0494	-.0494	-.0393
		45	-.0528	-.0627	-.0596	-.0661	-.0661	-.0759	-.0661	-.0462
		90	-.0289	-.0289	-.0163	-.0410	-.0535	-.0285	-.0163	-.0034
		135	-.0163	-.0209	-.0087	-.0163	-.0283	.0213	.0581	.1222
		180	-.0163	.0334	.0334	.0338	.0470	.0710	.1454	.4109
8.56		0	.0133	-.0296	-.0330	-.0262	-.0294	-.0494	-.0429	-.0328
		15	-.0034	-.0463	-.0528	-.0596	-.0626	-.0759	-.0725	-.0462
		45	.0197	-.0167	-.0201	-.0296	-.0328	-.0361	-.0595	-.0594
		75	.0065	-.0197	-.0429	-.0627	-.0661	-.0729	-.0695	-.0462
		90	.0334	.0334	.0213	-.0038	-.0283	-.0285	-.0038	.0470
		105	.0459	.0957	.0835	.0585	.0344	.0338	.0706	.1096
		135	.0459	.0832	.0835	.0585	.0592	.0710	.1204	.2352
		165	.0706	.0957	.0957	.1086	.1096	.1458	.2324	.4487
		180	.0581	.0957	.0835	.0710	.0844	.1333	.2324	.4613
9.03	1.50	0	-.0197	-.0099	-.0330	-.0395	-.0294	-.0429	-.0463	-.0229
		45	-.0497	-.0562	-.0528	-.0627	-.0596	-.0759	-.0661	-.0393
		90	-.0266	-.0463	-.0365	-.0661	-.0561	-.0627	-.0395	-.0130
		180	-.0266	-.0463	-.0365	-.0661	-.0561	-.0627	-.0395	-.0130
9.59		0	.0133	-.0133	-.0103	-.0494	-.0363	-.0429	-.0361	-.0264
		45	.0030	-.0133	-.0133	-.0463	-.0363	-.0361	-.0330	-.0328
		90	.0334	-.0038	-.0289	-.0535	-.0535	-.0285	-.0038	.0092
		135	.0084	-.0038	-.0410	-.0535	-.0409	-.0410	-.0038	.0970
10.76		0	.0562	.0163	.0030	-.0494	-.0493	-.0661	-.0429	-.0428
		45	.0494	-.0068	-.0167	-.0395	-.0294	-.0459	-.0494	-.0363
		90	.0581	-.0038	-.0289	-.0410	-.0535	-.0285	-.0163	-.0034
		135	.0581	.0334	.0087	-.0163	-.0283	-.0213	-.0706	.1600
		180	.0581	.0459	.0334	.0213	.0344	.0835	.1576	.3609

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(e)  $M = 4.65$  - Continued

$x$ , in.	$r$ , in.	$\theta$ , deg	$C_p$ at $\alpha$ of:							
			40°	45°	50°	55°	60°	65°	70°	75°
-1.01	.00	0	1.1178	.9842	.8714	.7735	.6473	.5620	.4879	.4317
-7.77	2.07	0 90 180	.6393 .9792 1.5207	.5217 .8342 1.3840	.4089 .7214 1.2842	.3414 .5885 1.1687	.2467 .4220 .9853	.1557 .3524 .8205	.1185 .2662 .6603	.0585 .1580 .5312
-6.09	3.93	0 45 90 135 180	.3242 .3091 .7527 1.3443 1.7980	.2464 .3091 .6842 1.3218 1.7842	.1591 .2214 .5589 1.2591 1.8093	.1561 .1933 .4894 1.2303 1.7736	.0592 .0840 .3720 1.1228 1.6735	.0570 .0570 .2787 1.0051 1.5223	-.0046 .0080 .2172 .8695 1.3130	.0087 .0163 .1454 .7055 1.0788
-3.36		15 45 90 135 180	.0202 -.0496 .0726 .0095 1.356	.0197 -.0463 .0839 .1215 1.2464	-.0167 -.0528 .0839 .1466 1.2840	-.0099 -.0695 .1192 .1933 .4401	.0229 -.0527 .0966 .2967 .6599	-.0266 -.0759 .0942 .4632 1.1160	.0065 -.0824 .1185 .6110 1.4607	.0456 -.0201 .1082 .7302 1.6514
2.29		0 45 90 135 180	-.0462 -.0496 -.0157 .0978 1.2738	-.0429 -.0463 .0091 .1466 .3714	-.0528 -.0528 .0091 .2214 .5840	-.0794 -.0699 .3167 .3720 .7488	-.0561 .0340 .3720 .4511 .8975	-.0725 .0816 .5126 .5935 1.0419	-.0695 .1063 .5126 1.1896	-.0201 .1207 .3935 1.3275
4.51		0 45 90 135 180	-.0462 -.0496 -.0031 .0600 .1986	-.0425 -.0463 .0091 .1215 .3341	-.0494 -.0528 .0091 .1716 .4967	-.0627 -.0759 .0820 .3045 .6501	-.0363 -.0527 .0592 .3345 .7974	-.0858 -.0759 .0816 .4143 .9557	-.0627 -.0596 .0942 .4879 1.0666	.0365 -.0266 .0557 .5663 1.2158
6.61		0 45 90 135 180	-.0393 -.0462 -.0157 .0852 1.2360	-.0395 -.0463 -.0034 .1842 .4465	-.0429 -.0494 .0091 .2840 .7340	-.0429 -.0695 .0699 .3907 .7613	-.0164 -.0397 .0592 .3720 .7600	-.0627 -.0725 .0942 .5863 1.2143	-.0627 -.0627 .1063 .7344 1.5469	-.0068 -.0232 .1329 .8422 1.7630
6.93		0 45 90 135 180	-.0393 -.0462 -.0157 .1608 .5511	-.0330 -.0463 .0091 .2966 .8217	-.0429 -.0494 .0338 .4089 1.0966	-.0494 -.0661 .0699 .5388 1.4528	-.0233 -.0397 .0592 .7222 1.8988	-.0463 -.0759 .1185 .7833 1.8051	-.0399 -.0596 .1185 .7959 1.7808	.0030 -.0266 .1454 .9421 2.0869
8.56		0 15 45 75 90 105 135 165 180	-.0264 -.0363 -.0229 -.0462 .0095 .1482 .3620 .7775 .8406	-.0330 -.0463 -.0296 -.0497 .0589 .2464 .5589 1.1592 1.1968	-.0395 -.0463 -.0365 -.0528 .0839 .3964 .7590 1.4342 1.3966	-.0330 -.0463 -.0296 -.0528 .0839 .4894 .8354 1.5268 1.5515	-.0065 -.0363 -.0065 -.0397 .1561 .1593 .1557 .1557 .1557	-.0463 -.0661 -.0266 -.0661 .1557 .1557 .1557 .1557 .1557	-.0232 -.0695 .0232 -.0627 .0232 .0232 .0129 .0129 .0129	-.0004 -.0232 .0129 -.0167 .0129 .0129 .0129 .0129 .0129
9.03	1.50	0 90 180	-.0229 -.0363 .0202	-.0330 -.0395 .0330	-.0395 -.0365 .0429	-.0365 -.0164 .0791	-.0034 -.0330 .0661	-.0395 -.0163 .1610	-.0266 .0163 .1181	.0129 .1181 .3057
9.59		0 45 90 135 180	-.0229 -.0328 .0222 .1482 .3494	-.0330 -.0365 .0589 .2464 .5339	-.0330 -.0395 .0714 .3091 .7841	-.0562 -.0395 .1439 .3907 .8107	-.0134 -.0528 .0966 .3468 .7848	-.0528 -.0494 .0942 .3281 .9683	-.0463 -.0399 .0942 .3034 1.0666	-.0330 -.0232 .1207 .3444 1.8253
10.76		0 45 90 135 180	-.0462 -.0462 -.0031 .2486 .6267	-.0463 -.0330 .0213 .3714 .7340	-.0528 -.0494 .0589 .3463 .8965	-.0627 -.0562 .0945 .4526 1.0453	-.0233 -.0065 .0840 .6099 1.2102	-.0759 -.0627 .1185 .6850 1.2637	-.0596 -.0528 .1310 .7218 1.3745	-.0429 -.0300 .1826 .8422 1.5891

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/8-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(e)  $M = 4.65$  - Continued

$x$ , in.	$r$ , in.	$\theta$ , deg	$C_p$ at $\alpha$ of:							
			80°	85°	95°	100°	105°	110°	115°	120°
-1.01	.00	0	.4063	.3820	.0638	.0429	.0387	.0080	.0216	.0330
-.77	2.07	0	.0334	.0209	-.0452	-.0486	-.0137	-.0520	-.0414	-.0376
		90	.0832	.0459	.3546	.3034	.3402	.3429	.3695	.3303
		180	.3687	.2825	.1314	.0262	.0649	.0000	.0000	-.0266
-.09	3.93	0	-.0289	-.0163	-.0239	-.0380	-.0103	-.0448	-.0311	-.0308
		45	-.0414	-.0410	-.0239	-.0273	-.0068	-.0414	-.0380	-.0342
		90	.0953	.0710	-.0133	-.0926	.0125	-.0528	-.0399	-.0133
		135	.4932	.2700	—	—	—	—	—	—
		180	.8038	.5312	—	—	—	—	—	—
		15	.0129	-.0099	-.0171	-.0273	-.0137	-.0280	-.0273	-.0376
+.36		45	-.0528	-.0661	-.0311	-.0380	-.0171	-.0520	-.0452	-.0376
		90	.0832	.0710	.0524	.0000	.1306	.1188	.1318	.1587
		135	.7666	.7925	.8281	.7917	.8779	.8578	.9102	.9250
		180	1.7231	1.8006	1.7622	1.6760	1.7303	1.6627	1.6362	1.5990
		45	-.0596	-.0627	-.0205	-.0346	-.0030	-.0414	-.0311	-.0270
2.29		90	.1204	.1580	.1838	.1450	.2354	.2111	.2373	.2381
		135	.6671	.7552	.8547	.8578	.9565	.9633	.9895	.9648
		180	1.4497	1.5765	1.6962	1.7022	1.7827	1.7417	1.7417	1.7311
		45	-.0596	-.0725	.0004	-.0099	.0106	-.0239	-.0030	-.0095
4.51		90	-.0497	-.0725	-.0205	-.0311	-.0068	-.0414	-.0311	-.0270
		135	.1204	.1580	.1838	.1450	.2354	.2111	.2506	.2643
		180	.6671	.7552	.8547	.8578	.9565	.9633	1.0423	1.0442
		45	-.0497	-.0725	—	—	—	—	1.7812	1.7444
		90	.1204	.1580	.1838	.1450	.2354	.2111	.2506	.2643
6.61		135	.6299	.7427	.8942	.9238	1.0089	1.0028	1.0423	1.0442
		180	1.3381	1.5021	1.6700	1.6889	1.7827	1.7683	1.7812	1.7444
		0	-.0399	-.0497	.0004	-.0099	.0144	-.0239	-.0030	.0190
		45	-.0627	-.0661	-.0171	-.0311	-.0068	-.0380	-.0273	-.0023
		90	.1450	.1705	.1443	.1318	.2092	.2244	.2373	.2248
		135	.9405	.9546	.9599	.9105	1.0089	.9762	1.0290	1.1103
6.93		180	1.9221	1.9001	1.8017	1.7288	1.7956	1.7812	1.7812	1.9164
		0	-.0365	-.0365	.0182	.0042	.0247	-.0099	.0042	.0262
		45	-.0562	-.0661	-.0133	-.0273	-.0030	-.0380	-.0205	-.0129
		90	.1701	.1580	.1838	.1318	.2225	.1978	.2373	.2381
		135	.9652	.9546	.9728	.9238	.9960	.9895	1.0157	1.0442
8.56		180	2.1332	2.0371	1.8936	1.7816	1.8218	1.7812	1.7812	1.8237
		0	-.0232	-.0330	.0076	-.0133	.0144	-.0133	-.0065	.0118
		45	-.0528	-.0627	—	—	—	—	—	—
		90	-.0232	-.0266	—	—	—	—	—	—
		135	-.0497	-.0528	.1048	.0395	.1306	.0923	.1185	.0926
9.03	1.50	105	.1576	.1830	.0919	.0395	.1306	.1056	.0923	.0266
		135	.4310	.4940	.6178	.6068	.6945	.6466	.5673	.3171
		165	1.4125	1.4645	1.5910	1.5701	1.0355	1.0028	.9629	.8460
		180	1.5492	1.5765	1.7227	1.7288	1.6384	1.6229	1.5306	1.3218
		0	-.0232	-.0266	.0004	.0182	.0213	.0292	.0216	.0262
		45	.1842	.2180	.3812	.2772	.3535	.2901	.3429	.4230
9.59		90	.5001	.7063	1.1836	1.3461	1.5860	1.7284	1.7945	1.8503
		0	-.0399	-.0429	-.0133	.0110	.0038	.0186	.0182	.0190
		45	-.0330	-.0429	-.0311	-.0205	-.0171	-.0201	-.0205	-.0095
		90	.1078	.1830	—	—	—	—	—	—
		135	.7290	1.0415	—	—	—	—	—	—
10.76		180	2.0588	1.8754	1.9069	1.7945	1.8089	1.7550	1.7679	1.7311
		0	-.0562	-.0562	-.0205	-.0030	-.0030	-.0027	.0042	.0049
		45	-.0463	-.0562	-.0273	.0216	.0038	.0292	.0110	.0475
		90	.1948	.1830	.1838	.1450	.2092	.1716	.1845	.1716
		135	.9155	.9421	.9599	.9238	.9960	.9500	.9367	.8855
		180	1.7482	1.8256	1.7751	1.7417	1.8089	1.7417	1.7151	1.6255

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Continued

(e) M = 4.65 - Concluded

x, in.	r, in.	$\theta$ , deg	C <sub>p</sub> at $\alpha$ of:							
			125°	150°	155°	160°	165°	170°	175°	180°
-1.01	.00	0	.0262	—	—	—	—	—	—	—
-1.77	2.07	0	-.0308	-.0494	-.0592	-.0592	-.0429	-.0627	-.0596	-.0528
	90	.3178	-.0395	-.0429	-.0395	-.0459	-.0429	-.0395	-.0395	-.0429
	180	-.0528	-.0459	-.0459	-.0562	-.0562	-.0562	-.0528	-.0528	-.0429
-1.09	3.93	0	-.0270	-.0592	-.0494	-.0592	-.0459	-.0528	-.0528	-.0459
	45	-.0342	-.0562	-.0627	-.0592	-.0592	-.0494	-.0494	-.0494	-.0395
	90	-.0395	-.0592	-.0459	-.0592	-.0562	-.0592	-.0528	-.0528	-.0562
	135	—	-.0459	-.0327	-.0395	-.0327	-.0429	-.0429	-.0429	-.0327
	180	—	—	-.0429	-.0262	-.0262	-.0296	-.0262	-.0330	-.0262
.36		15	-.0414	—	—	—	—	—	—	—
	45	-.0201	-.0027	—	.0349	.0725	.0851	.1488	.2366	.3125
	90	.1853	.2757	.3763	.4636	.4503	.3888	.3376	.3250	—
	135	.9402	1.0981	1.0081	.8046	.7651	.7047	.4891	.3125	—
	180	1.5754	1.5412	1.2861	.9812	.7780	.7298	.5016	.3000	—
2.29		0	—	.0478	.0854	.1105	.1101	.0983	.1105	.1735
	45	-.0201	-.0281	.0224	—	.0095	.0600	.0854	.1230	.1485
	90	.2517	—	—	—	—	—	—	—	—
	135	.9531	.7438	.7173	.6656	.6520	.4648	.3000	.1735	—
	180	1.6681	1.1490	.9952	.8927	.7526	.5658	.3376	.1735	—
4.51		0	-.0057	.0604	.0983	.1230	.1101	.1109	.1230	.1359
	45	-.0342	-.0156	.0349	.0475	.0725	.0983	.1230	.1485	—
	90	.2650	.1618	.1868	.1735	.1606	.1488	.1610	.1359	—
	135	1.0328	.8832	.8437	.6911	.6015	.4014	.2366	.1485	—
	180	1.7079	1.2880	—	1.0693	.7025	.5153	.2871	.1485	—
6.61		0	.0122	.0733	.1359	.1610	.1101	.0854	.0854	.1105
	45	-.0270	-.0535	-.0156	.0475	.0475	.0604	.0725	.1230	.1230
	90	.1853	.0353	.0349	.0600	.0725	.0604	.1230	.0854	—
	135	1.0590	2.0652	1.0981	.7427	.4765	.4127	.2373	.1610	.0980
6.93		0	.0156	.0353	.0604	.0854	.0600	.0604	.0600	.0600
	45	-.0270	-.0535	-.0281	.0224	.0095	.0224	.0475	.0475	.0600
	90	.2252	—	—	—	—	—	—	—	—
	135	.8870	.2377	.2373	.1864	.1481	.0854	.0854	.0475	—
	180	1.6548	—	—	—	—	—	—	—	—
8.56		0	.0011	-.0027	.0349	.0600	.0475	.0099	.0349	.0349
	15	—	-.0661	-.0281	-.0030	.0095	.0099	.0349	.0349	.0475
	45	—	-.0661	-.0281	.0095	-.0030	-.0030	.0349	.0349	.0475
	75	.0664	—	—	—	—	—	—	—	—
	90	-.0133	-.0281	-.0030	.0095	.0095	-.0030	.0600	.0600	.0475
	105	.0926	.1113	.1488	.1485	.0976	.0729	.0600	.0600	—
	135	.5031	.2377	.2119	.1864	.1230	.0729	.0600	.0349	—
	165	1.0590	.4021	.4143	.3881	.2236	.1109	.0854	.0475	—
	180	1.0328	.3771	.3634	.3881	.2111	.1109	.0600	.0475	—
9.03	1.50	0	.0440	.0983	.1359	.1610	.1230	.0854	.1230	.1485
	90	.5031	.1113	.1359	.1864	.2236	.3509	.4006	.2495	—
	180	2.0918	1.5917	1.3871	1.0442	.6896	.5024	.4386	.2745	—
9.59		0	.0156	.1238	.1488	.1610	.1356	.1234	.1485	.1359
	45	-.0129	.0099	.0604	.1105	.1230	.1109	.1230	.1359	—
	90	—	.0733	.1359	.1485	.2741	.2498	.2240	.1610	—
	135	—	.5794	.4648	.3755	.3372	.2878	.2871	.2115	—
	180	1.7208	1.0351	.8312	.6151	.4378	.3258	.3125	.2366	—
10.76		0	-.0023	.0478	.0604	.0980	.0725	.0729	.1105	.1230
	45	.0084	-.0406	-.0030	.0600	.0475	.0475	.0725	.0725	.0980
	90	.1325	—	—	—	—	—	—	—	—
	135	.7943	.3011	.3129	.2620	.2362	.1488	.1105	.0980	—
	180	1.4828	.6299	.5153	.4260	.3243	.2119	.1359	.0854	—

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TABLE I. - PRESSURE COEFFICIENTS MEASURED ON EXIT AND REENTRY CONFIGURATION  
OF THE 1/9-SCALE MODEL AND REENTRY CONFIGURATION OF THE  
1/14.9-SCALE MODEL - Concluded

(f) M = 6.01.

x, in.	r, in.	$\phi$ , deg	C <sub>p</sub> at $\alpha$ of:						
			0°	5°	10°	15°	20°	25°	30°
-.47	1.25	0	1.683	1.592	1.471	1.338	1.183	1.026	.861
		45	1.686	1.611	1.514	1.392	1.264	1.111	.962
		90	1.636	1.636	1.607	1.551	1.475	1.376	1.260
		135	1.683	1.725	1.742	1.730	1.699	1.641	1.557
		180	1.639	1.696	1.729	1.734	1.728	1.688	1.626
-.06	2.38	0	1.201	1.118	1.020	.922	.797	.650	.513
		45	1.206	1.136	1.055	.963	.863	.7411	.616
		90	1.183	1.136	1.175	1.142	1.097	1.030	.960
		135	1.205	1.258	1.308	1.341	1.372	1.392	1.397
		180	1.184	1.259	1.337	1.415	1.497	1.571	1.637
1.722		0	-.0270	-.0246	-.0232	-.0242	-.0259	-.0269	-.0278
		45	-.0264	-.0247	-.0244	-.0251	-.0264	-.0275	-.0282
		90	-.0272	-.0264	-.0248	-.0250	-.0269	-.0286	-.0292
		135	-.0278	-.0252	-.0154	.0020	.0250	.0479	.0640
		180	-.0269	-.0192	0	.0285	.0623	.0954	—
2.709		0	-.0210	-.0233	-.0235	-.0246	-.0262	-.0274	-.0286
		45	-.0231	-.0231	-.0245	-.0258	-.0268	-.0279	-.0289
		90	-.0237	-.0241	-.0252	-.0258	-.0216	-.0193	-.0237
		135	-.0237	-.0176	-.0016	.0129	.0229	.031	.0378
		180	-.0222	-.0079	-.0123	.0334	.0531	.0712	—
3.992		0	.0047	-.0139	-.0186	-.0233	-.0256	-.0286	-.0301
		45	.0015	-.0167	-.0231	-.0248	-.0256	-.0277	-.0294
		90	-.0065	-.0091	-.0101	-.0141	-.0230	-.0284	-.0301
		135	-.0004	.0091	.0186	.0223	.0242	.0272	.0356
		180	.0024	.0190	.0329	.0438	.0552	.0689	.0913
4.172		0	.0276	-.0105	-.0164	-.0211	-.0230	-.0262	-.0277
		45	.0237	-.0125	-.0207	-.0226	-.0239	-.0266	-.0278
		90	.0027	.0021	.0006	-.0110	-.0227	-.028	-.0295
		135	.0182	.0398	.0431	.0471	.0406	.0469	.0502
		180	.0207	.0559	.0796	.1015	.1167	.1270	.1458
5.177		0	.1053	.0185	.0014	-.0048	-.0146	-.0237	-.0277
		45	.0937	.0274	-.0064	-.0150	-.0229	-.0283	-.0292
		90	.0792	.0540	.0345	.0011	-.0172	-.0241	-.0262
		135	.0864	.0986	.0905	.0834	.0816	.0852	.1044
		180	.1016	.1190	.1268	.1366	.1509	.1765	.2371
1.722		0	-.0274	-.0245	-.0231	-.0251	-.0268	-.0279	-.0288
		45	-.0268	-.0262	-.0250	-.0258	-.027	-.0283	-.0292
		90	-.0268	-.0265	-.0245	-.0236	-.0152	-.0026	.0077
		135	-.0260	-.0220	-.0091	.0110	.0342	.0567	.0758
		180	-.0277	-.0195	-.0006	.0276	.0603	.0938	.1249
2.699		0	-.0209	-.0231	-.0226	-.0240	-.0253	-.0268	-.0280
		45	-.0195	-.0242	-.0240	-.0248	-.0259	-.0276	-.0298
		90	-.0211	-.0212	-.0190	-.0078	-.026	-.0037	-.0062
		135	-.0201	-.0109	.0044	.0185	.0304	.0388	.0464
		180	-.022	-.0077	.0123	.0328	.0513	.0696	.0885

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TABLE II. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION OF THE 1/9-SCALE MODEL

(a)  $M = 1.60$ 

x, in.	r, in. (a)	$\theta$ , deg	$C_p$ at $\alpha$ of:					
			155°	160°	165°	170°	175°	180°
-.77	2.07	0	-.3740	-.3548	-.3362	-.3324	-.3190	-.3146
		90	-.3690	-.3548	-.3332	-.3245	-.3013	-.3186
		180	-.3720	-.3568	-.3313	-.3186	-.2864	-.3107
-.09	3.93	0	-.3730	-.3548	-.3362	-.3314	-.3121	-.3087
		45	-.3740	-.3528	-.3332	-.3275	-.3062	-.3067
		90	-.3640	-.3509	-.3293	-.3186	-.2905	-.3117
		135	-.3660	-.3528	-.3293	-.3146	-.2815	-.3097
		180	-.3520	-.3383	-.3176	-.3108	-.2785	-.3038
.36		0	.1387	.1426	.2149	.3654	.4022	.4122
		45	.0562	.2544	.4034	.5022	.3166	.6585
		90	.2435	.3811	.5467	.6238	.6889	.5827
		135	.8316	.8544	.8710	.8329	.7633	.6130
		180	1.0712	1.0445	1.0067	.9013	.7149	.6167
2.29		0	.0412	.0941	.1696	.2172	.2496	.3136
		45	-.0524	.0718	.1470	.1830	.2533	.3705
		135	.6742	.6197	.5732	.5136	.4357	.3629
		180	1.0338	.8954	.7617	.6201	.4916	.3743
4.51		0	.0449	.0978	.1395	.1982	.2198	.2833
		45	-.0374	.0978	.1470	.1602	.2310	.3780
		90	-.0449	.1053	.2375	.3198	.3278	.3136
		135	.6817	.5972	.5693	.5136	.4730	.3250
		180	1.0413	.8880	.7617	.6238	.5027	.3856
6.61		0	.0488	.0792	.0529	.1336	.1491	.1696
		45	-.0561	.0047	.0792	.1298	.1566	.3440
		90	-.2846	-.0587	.0641	.1640	.2124	.1810
		180	1.0712	.8507	.6825	.4984	.3576	.3212
6.93		0	.0038	.0532	.0377	.0918	.1156	.1355
		45	-.1386	-.0624	.0340	.0804	.1268	.2530
		135	.5507	.3923	.2904	.2514	.2645	.1582
		180	.7978	.6122	.4638	.3236	.2347	.2378
8.56		0	-.2246	-.1071	-.0377	-.1970	-.1225	-.0882
		15	-.2060	-.1109	-.0527	-.0868	-.1783	-.1147
		45	-.2846	-.1704	-.1018	-.0868	-.0667	-.1412
		90	-.3296	-.2897	-.3205	-.2844	-.2305	-.1980
		105	-.0712	-.1109	-.1885	-.1552	-.1337	-.0350
		135	.1499	.0792	.0151	-.0868	-.1523	-.0654
		165	.3895	.2879	.2112	.0880	.0078	-.0729
		180	.0300	-.0251	-.0867	-.1514	-.2007	-.2548

<sup>a</sup>Radius is listed only for hemispherical ablation shield (axial stations of -.77 and -.09 inch).

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TABLE II. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION OF THE 1/9-SCALE MODEL - Continued

(b) M = 2.00

x, in.	r, in.	$\theta$ , deg	$C_p$ at $\alpha$ of:					
			155°	160°	165°	170°	175°	180°
-.77	2.07	0	-.2491	-.2570	-.2439	-.2481	-.2446	-.2409
		90	-.2606	-.2560	-.2439	-.2429	-.2312	-.2409
		180	-.2606	-.2591	-.2429	-.2408	-.2312	-.2347
-.09	3.93	0	-.2450	-.2581	-.2450	-.2461	-.2415	-.2337
		45	-.2502	-.2560	-.2450	-.2429	-.2323	-.2306
		90	-.2544	-.2539	-.2429	-.2388	-.2229	-.2347
		135	-.2585	-.2539	-.2429	-.2388	-.2239	-.2316
		180	-.2481	-.2539	-.2367	-.2357	-.2218	-.2244
.36		0	.1381	.1024	.1331	.3803	.4041	.4750
		45	.0017	.1424	.2368	.3648	.3400	.5820
		90	.3137	.3142	.4321	.5404	.5723	.5028
		135	1.0742	1.0375	.9264	.8175	.7126	.6335
		180	1.3472	1.2973	1.1496	.9267	.6965	.5623
2.29		0	.0173	.0345	.0693	.1501	.1757	.2651
		45	-.0763	-.0015	.0535	.1346	.1757	.3047
		90	.7388	.6099	.5118	.4585	.3760	.3284
		180	1.0977	.8816	.7271	.5755	.4241	.3284
4.51		0	.0251	.0265	.0654	.1501	.1557	.2412
		45	-.0646	-.0015	.0773	.1346	.1597	.3165
		90	.0329	.0184	.1252	.2360	.2879	.2373
		135	.7232	.6059	.5238	.4467	.3600	.3047
		180	1.0469	.8776	.7471	.5794	.3961	.3284
6.61		0	-.0178	.0065	.0375	.1033	.1156	.1541
		45	-.1114	-.0974	-.0463	.1033	.1196	.2730
		90	-.1465	-.1693	-.0542	.0566	.0956	.1541
		180	1.0352	.8617	.6713	.4545	.2478	.2214
6.93		0	-.0490	-.0254	.0096	.0643	.0635	.1065
		45	-.1543	-.1693	-.0980	.0487	.0715	.1581
		135	.4736	.3102	.2328	.1774	.1557	.1462
		180	.7388	.5660	.4042	.2750	.1477	.1223
8.56		0	-.1582	-.1733	-.1738	-.1932	-.2129	-.1471
		15	-.1856	-.1534	-.1339	-.1269	-.1608	-.0916
		45	-.2323	-.2332	-.1539	-.1113	-.1047	-.0876
		90	-.2597	-.2852	-.2575	-.1777	-.1728	-.1669
		105	-.0140	-.1054	-.1020	-.0567	-.0607	-.0718
		135	.2045	.1224	.0535	-.0371	-.1368	-.0916
		165	.4540	.3542	.2208	.1150	.0195	.0243
		180	.1616	.0785	.0096	-.0489	-.1208	-.1392

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TABLE II. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION OF THE  
1/8-SCALE MODEL - Continued

(c) M = 2.85

x, in.	r, in.	\theta, deg	C <sub>p</sub> at \alpha of:					
			155°	160°	165°	170°	175°	180°
-.77	2.07	0	-.1398	-.1481	-.1430	-.1430	-.1432	-.1478
		90	-.1415	-.1464	-.1430	-.1382	-.1350	-.1510
		180	-.1381	-.1496	-.1430	-.1398	-.1366	-.1478
-.09	3.93	0	-.1349	-.1464	-.1413	-.1398	-.1398	-.1478
		45	-.1415	-.1430	-.1413	-.1398	-.1398	-.1478
		90	-.1398	-.1447	-.1398	-.1348	-.1350	-.1445
		135	-.1381	-.1430	-.1398	-.1365	-.1284	-.1445
		180	-.1366	-.1398	-.1382	-.1333	-.1333	-.1413
.36		45	-.0502	-.0011	.1117	.1877	.2442	.3896
		90	.3960	.3857	.3929	.4449	.4636	.5090
		135	1.2881	1.1283	.9428	.7833	.6267	.4964
		180	1.6527	1.4840	1.1867	.9338	.6707	.4838
2.29		0	.0440	.0612	.0616	.1000	.1440	.2075
		135	.7855	.6292	.4991	.3822	.2943	.2389
4.51		0	.0190	.0426	.0492	.0937	.1250	.1823
		45	-.0942	-.0698	.0242	.0811	.1250	.2199
		90	.1132	.0862	.1053	.1376	.2067	.2137
		135	.7541	.5980	.4803	.3758	.2817	.2011
		180	1.1185	.8475	.6679	.5012	.3007	.2137
6.61		0	.0190	.0426	.0492	.0687	.1062	.1509
		45	-.0878	-.0760	-.0447	.0435	.0749	.1509
		90	-.0124	-.0261	-.0133	.0184	.0749	.1257
		180	1.0054	.7540	.5492	.3319	.1502	.1132
6.93		0	-.0062	.0113	.0304	.0374	.0499	.0754
		45	-.1004	-.0822	-.0634	.0060	.0435	.0378
		135	.2263	.1237	.0803	.0248	.0122	.0440
8.56		0	-.0754	-.0636	-.0634	-.0818	-.0756	-.0628
		15	-.1383	-.0886	-.0696	-.0693	-.0631	-.0502
		45	-.1383	-.1198	-.1134	-.0693	-.0317	-.0126
		90	-.1319	-.1198	-.1072	-.0756	-.0693	-.0502
		105	-.0062	-.0387	-.0197	-.0253	-.0191	-.0250
		135	.2075	.1361	.0492	.0060	-.0379	-.0628
		165	.3267	.2236	.1554	.0749	.0186	-.0126
		180	.3017	.1986	.1117	.0122	-.0379	-.0502

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TABLE II. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION OF THE  
1/9-SCALE MODEL - Continued

(d) M = 3.94

x, in.	r, in.	$\theta$ , deg	$C_p$ at $\alpha$ of:					
			155°	160°	165°	170°	175°	180°
-.77	2.07	0	-.0731	-.0776	-.0801	-.0801	-.0776	-.0730
		90	-.0685	-.0755	-.0777	-.0755	-.0730	-.0681
		180	-.0685	-.0755	-.0777	-.0730	-.0706	-.0681
-.09	3.93	0	-.0709	-.0755	-.0777	-.0776	-.0755	-.0706
		45	-.0731	-.0801	-.0801	-.0801	-.0776	-.0730
		90	-.0731	-.0801	—	-.0755	-.0755	-.0706
		135	-.0636	-.0681	-.0706	-.0681	-.0660	-.0635
		180	-.0614	-.0660	-.0660	-.0660	-.0586	-.0565
.36		45	-.0108	-.0103	.0704	.1344	.2164	.3244
		90	.4666	.4520	.3773	.3787	.4066	.4151
		135	1.2329	1.1320	1.0542	.7861	.5880	.3969
		180	1.6383	1.3768	1.3070	.9037	.6154	.3969
2.29		0	.0612	.0804	.0885	.0890	.1439	.1887
		135	.7552	.7240	.5668	.4151	.3160	.2069
4.51		0	.0252	.0622	.0704	.0709	.1075	.1523
		45	-.0379	-.0377	.0073	.0619	.1075	.1705
		90	.1694	.1165	.1066	.1615	.1710	.1887
		135	.8724	.6697	.5308	.3787	.2888	.1705
		180	1.0975	.9960	.7024	.5326	.2888	.1705
6.61		0	.0341	.0622	.0704	.0619	.0804	.1162
		45	-.0379	-.0467	-.0379	-.0016	.0711	.1072
		90	.0522	.0168	.0162	-.0016	.0622	.0801
		180	1.0797	.7240	.5126	.2611	.1257	.0709
6.93		0	.0252	.0168	.0344	.0347	.0350	.0258
		45	-.0560	-.0556	-.0379	-.0016	.0350	.0258
		135	.2233	.1436	.0704	.0437	.0258	.0166
8.56		0	-.0290	-.0377	-.0290	-.0377	-.0195	-.0106
		15	-.0650	-.0738	-.0379	-.0467	-.0285	-.0106
		45	-.0739	-.0738	-.0560	-.0467	-.0014	.0076
		90	-.0379	-.0556	-.0379	-.0377	-.0103	.0076
		105	.0612	.0168	.0162	.0166	-.0014	-.0014
		135	.2325	.1528	.0704	.0347	.0168	-.0106
		165	.4217	.2525	.1697	.0890	.0440	.0076
		180	.3857	.2343	.1516	.0709	.0168	-.0106

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**TABLE II. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION OF THE  
1/9-SCALE MODEL - Concluded**

(e)  $M = 4.65$

x, in.	r, in.	$\theta$ , deg	$C_p$ at $\alpha$ of:					
			155°	160°	165°	170°	175°	180°
-.77	2.07	0	-.0528	-.0562	-.0528	-.0527	-.0528	-.0528
		90	-.0528	-.0528	-.0459	-.0458	-.0459	-.0459
		180	-.0494	-.0528	-.0459	-.0493	-.0459	-.0494
-.09	3.93	0	-.0528	-.0528	-.0528	-.0493	-.0528	-.0494
		45	-.0528	-.0562	-.0562	-.0561	-.0562	-.0528
		90	-.0562	-.0592	-.0528	-.0527	-.0528	-.0528
		135	-.0429	-.0459	-.0395	-.0359	-.0327	-.0361
		180	-.0361	-.0361	-.0296	-.0294	-.0262	-.0262
.36		45	-.0281	.0224	.0349	.1367	.2123	.3247
		90	.4534	.4894	.3759	.3395	.3767	.4127
		135	1.1627	1.0450	1.0195	.8467	.5916	.4257
		180	1.5803	1.3605	1.0955	.9357	.6166	.4257
2.29		0	.0608	.0854	.0980	.0989	.1109	.1735
		135	.7571	.7799	.6535	.4537	.3387	.2240
4.51		0	.0353	.0604	.0854	.0859	.0983	.1610
		45	-.0156	.0099	.0095	.0481	.0858	.1610
		90	.1618	.1614	.0980	.1367	.1488	.1861
		135	.8205	.7420	.6155	.4159	.3133	.1986
		180	1.2386	1.1460	.7799	.6057	.3387	.1861
6.61		0	.0608	.0604	.0729	.0989	.0729	.1105
		45	-.0027	-.0156	-.0030	.0099	.0729	.1105
		90	.0608	.0475	.0224	.0225	.0349	.0851
		180	.9599	.7799	.4769	.2635	.1298	.0851
6.93		0	.0353	.0349	.0349	.0481	.0478	.0475
		45	-.0156	-.0156	-.0281	.0099	.0349	.0475
		135	.1997	.1739	.0854	.0607	.0349	.0475
8.56		0	-.0027	-.0156	-.0156	.0099	-.0027	.0349
		15	-.0535	-.0281	-.0281	.0099	-.0027	.0349
		45	-.0661	-.0406	-.0281	.0099	.0099	.0349
		90	-.0027	-.0156	-.0030	.0099	-.0027	.0349
		105	.0987	.0729	.0475	.0481	.0224	.0349
		135	.2381	.1864	.0980	.0481	.0349	.0220
		165	.4913	.2874	.1359	.1115	.0478	.0349
		180	.5039	.2624	.1739	.0989	.0349	.0349

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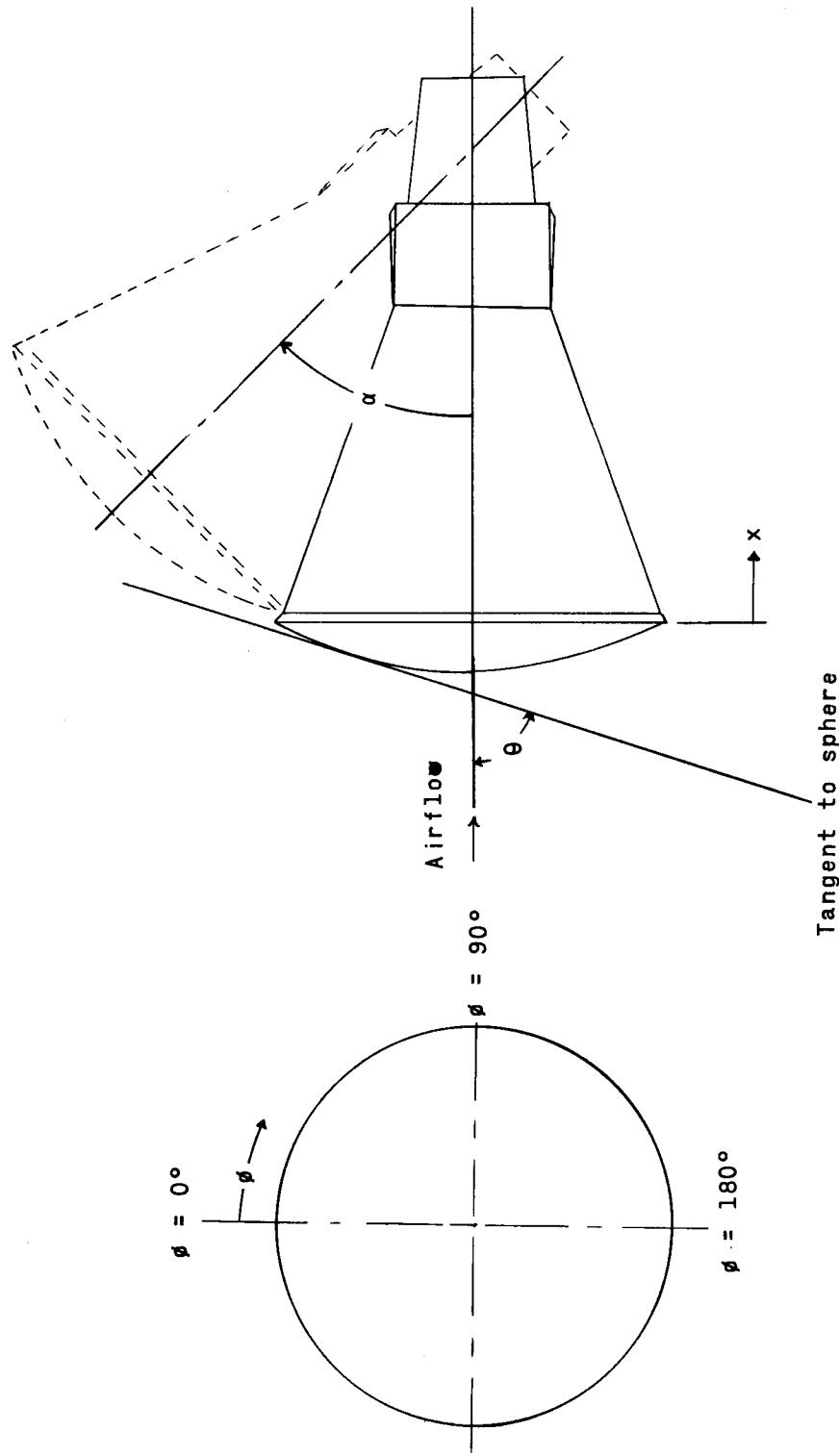


Figure 1.- Coordinate system of Project Mercury capsule. Arrows indicate positive direction.

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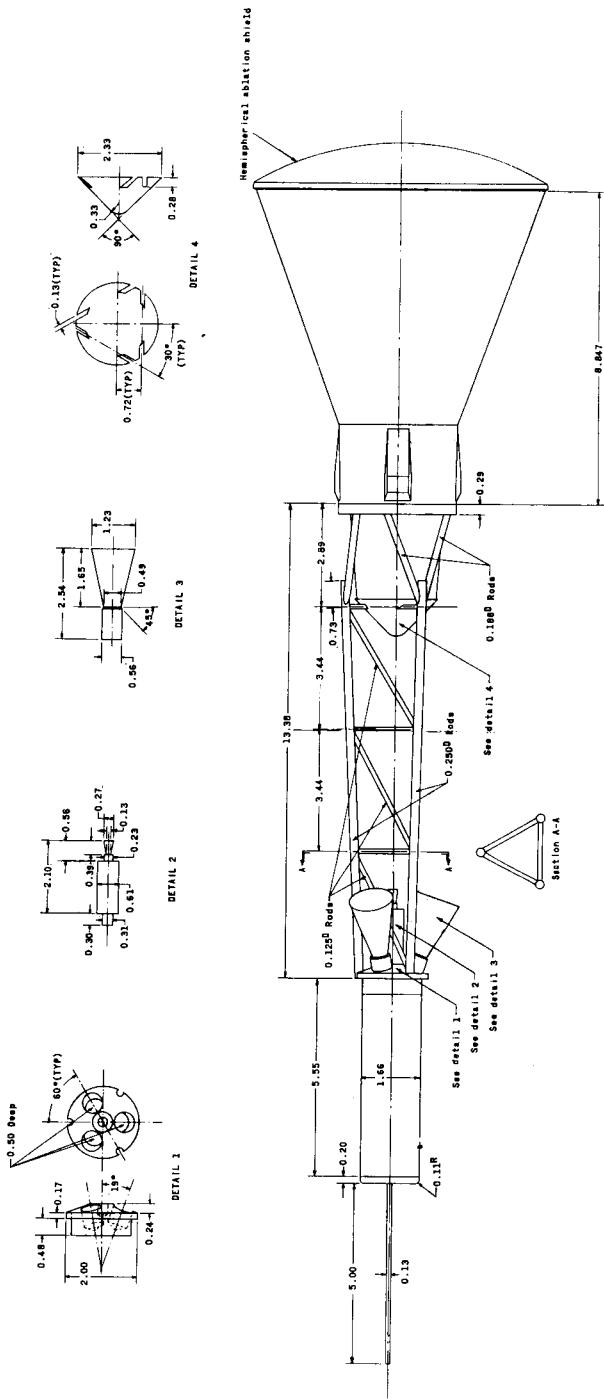


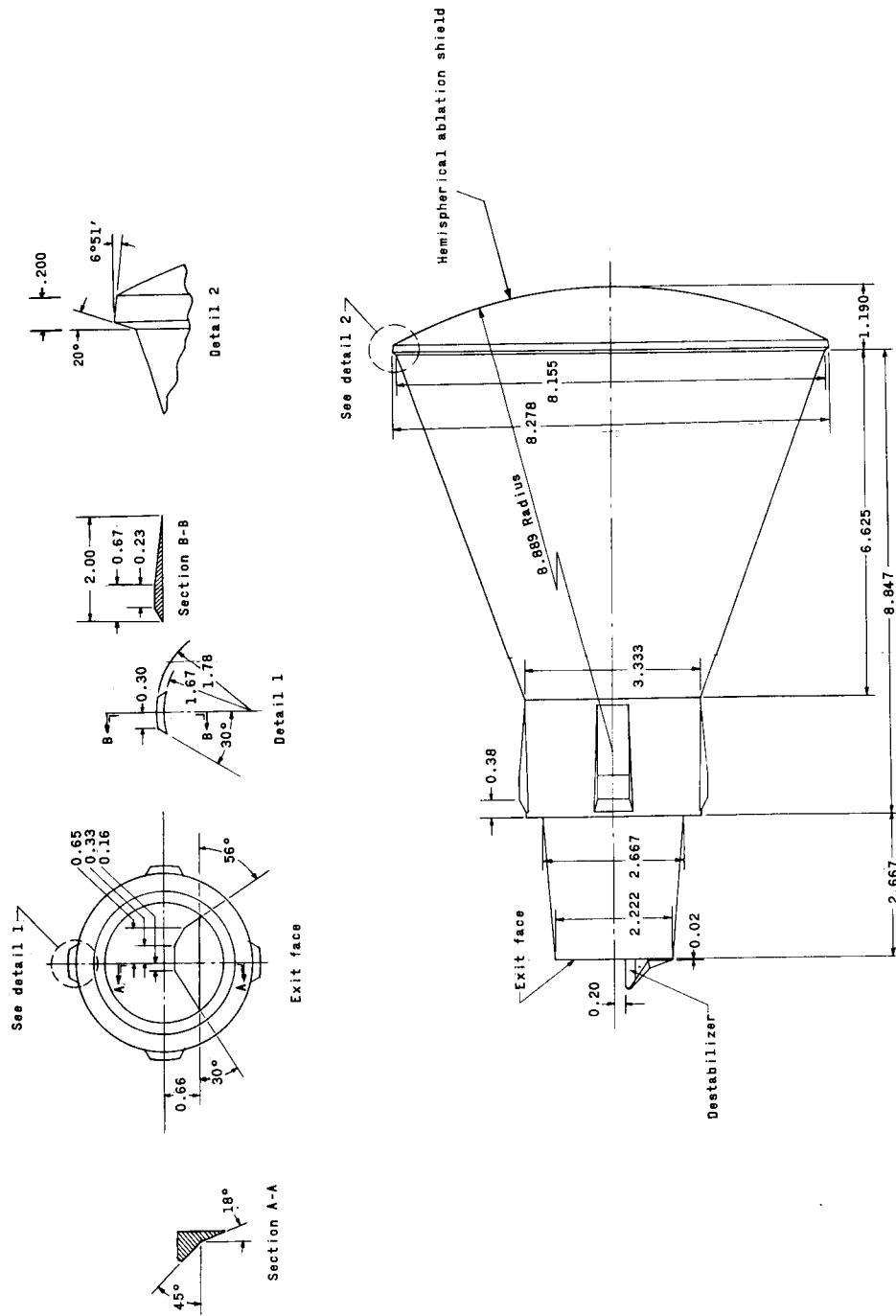
Figure 2.- Drawings and dimensions of 1/9-scale model. All dimensions are in inches unless otherwise noted.

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(b) Exit and reentry configuration.

Figure 2.— Concluded.

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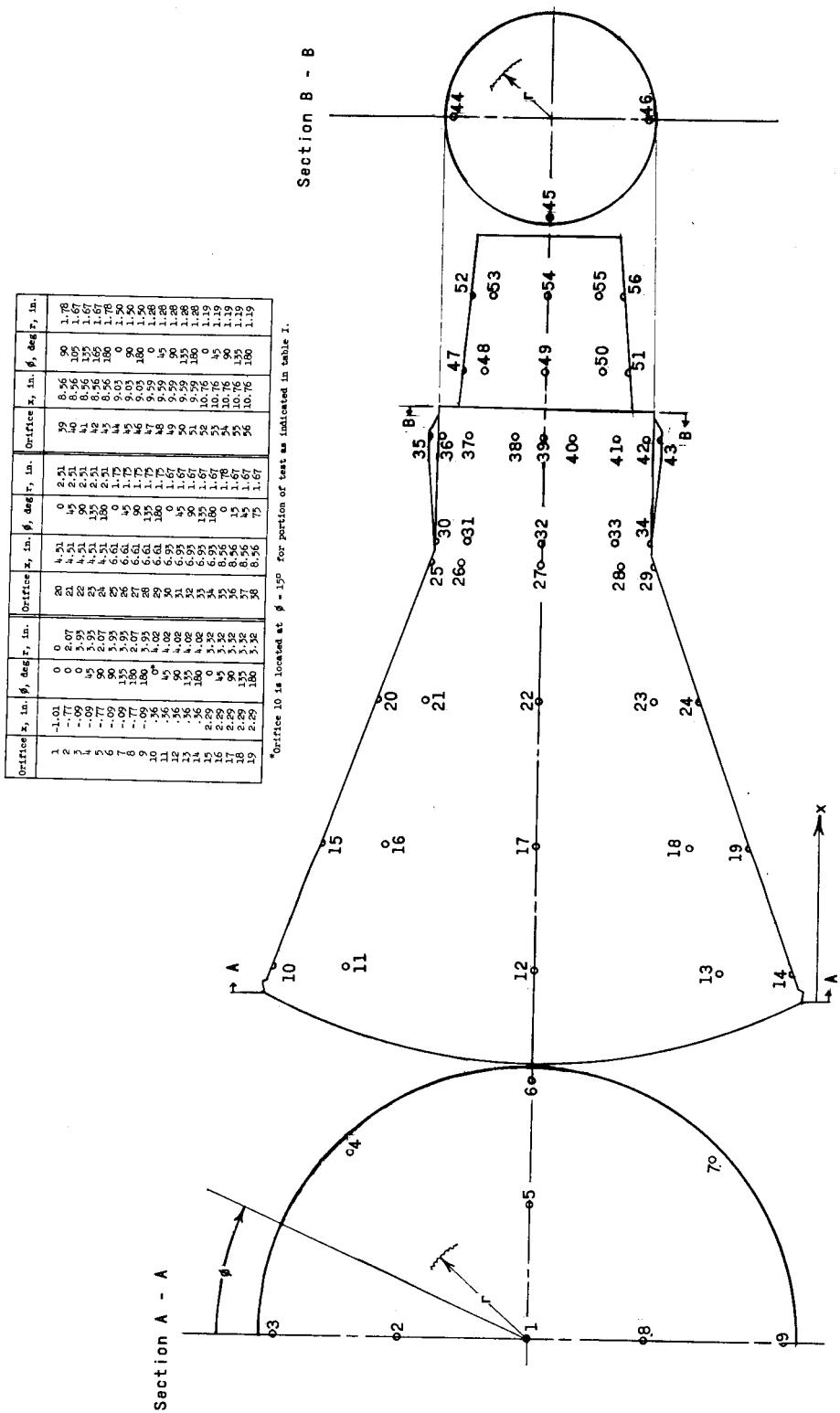


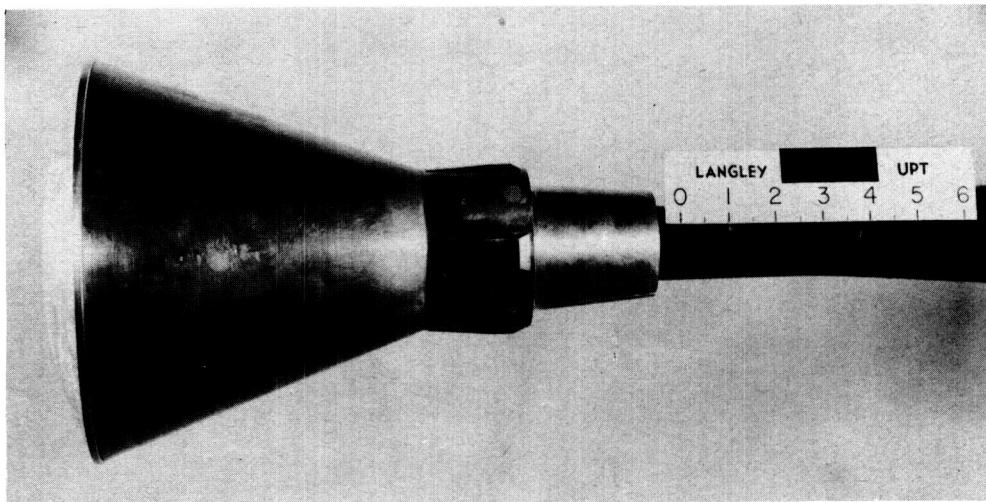
Figure 3.- Pressure-orifice locations on the 1/9-scale model of the Project Mercury capsule.

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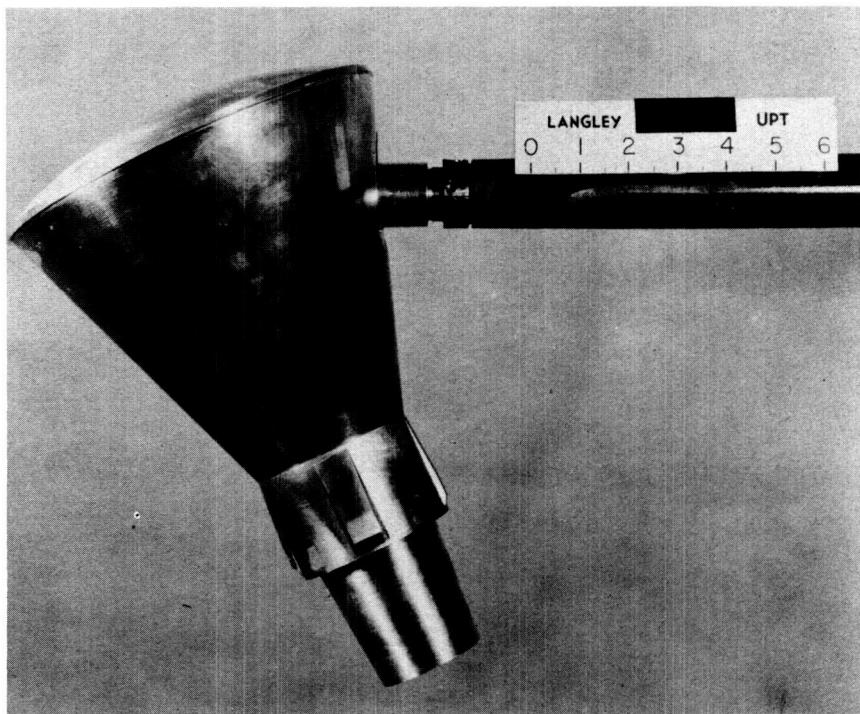
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$\alpha = 0^\circ \text{ to } 50^\circ$

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$\alpha = 55^\circ \text{ to } 85^\circ$

(a) Exit and reentry configuration.

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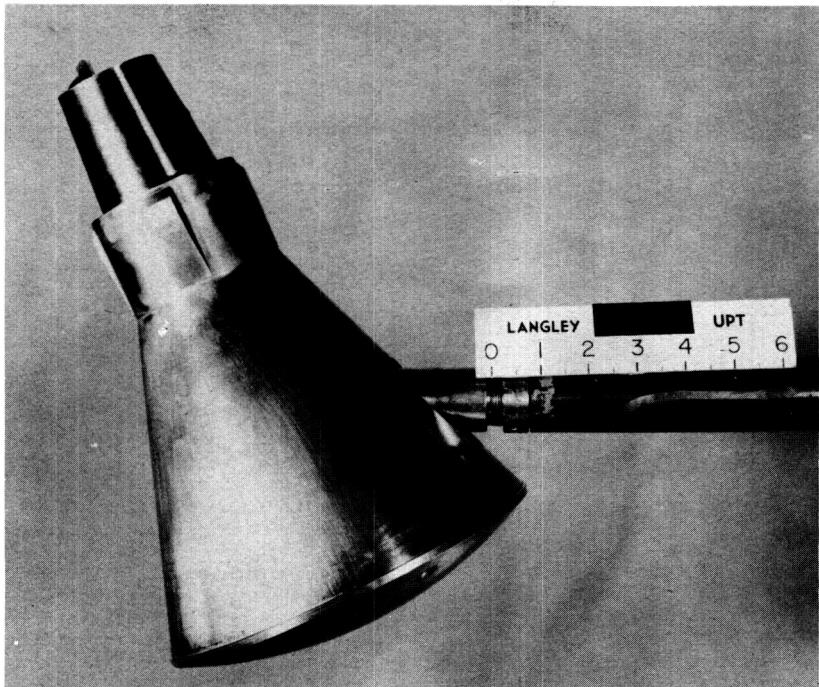
Figure 4.- Sting arrangements used to obtain angle-of-attack range for 1/9-scale model.

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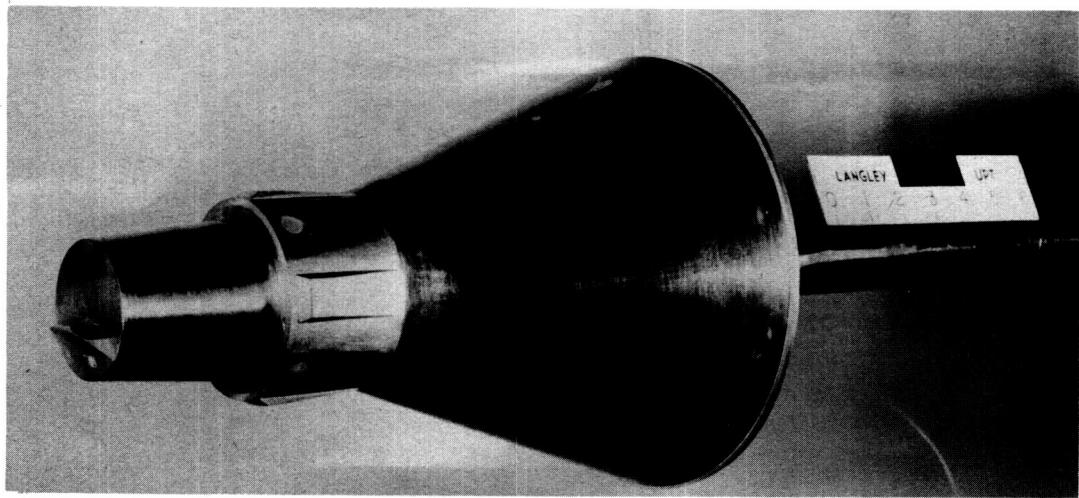
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$\alpha = 95^\circ \text{ to } 125^\circ$

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$\alpha = 150^\circ \text{ to } 180^\circ$

(a) Concluded.

L-59-2794

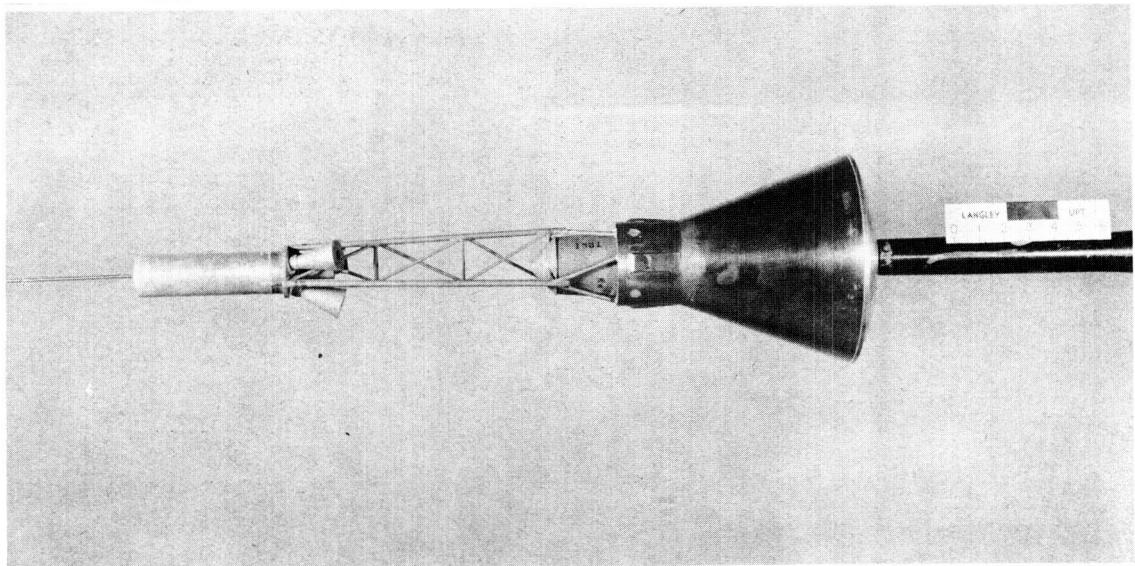
Figure 4.- Continued.

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$\alpha = 155^\circ \text{ to } 180^\circ$

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(b) Escape configuration.

Figure 4.- Concluded.

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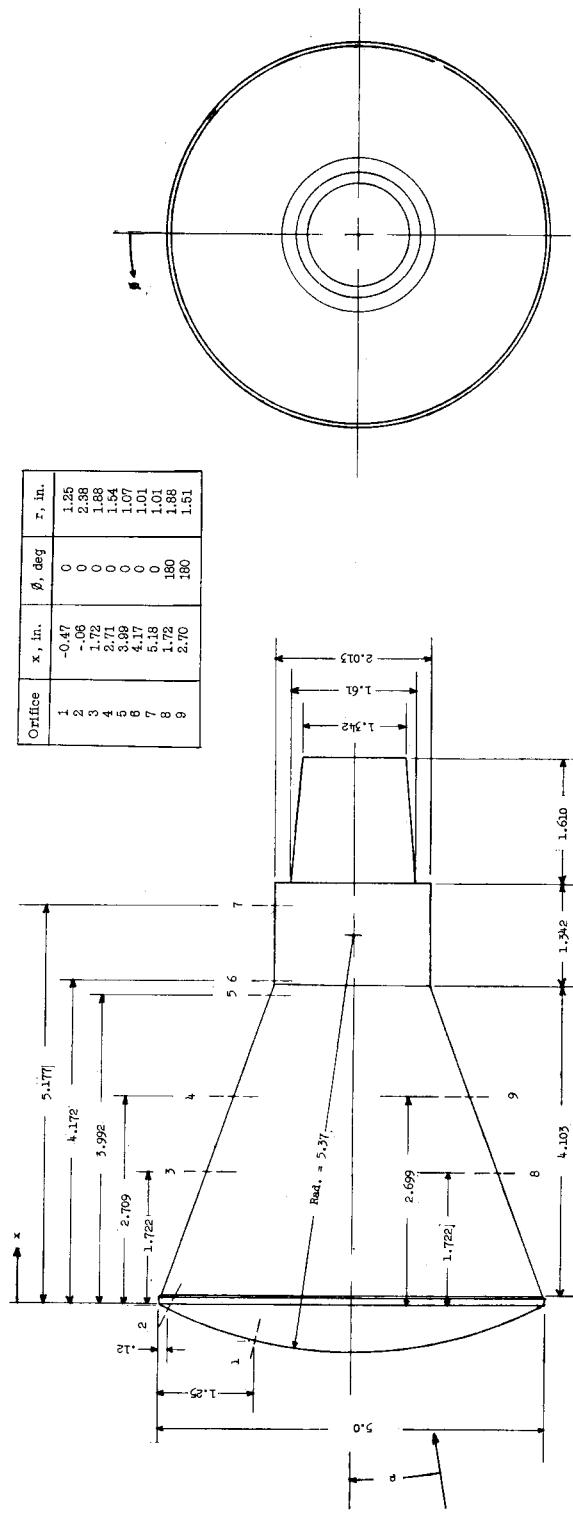


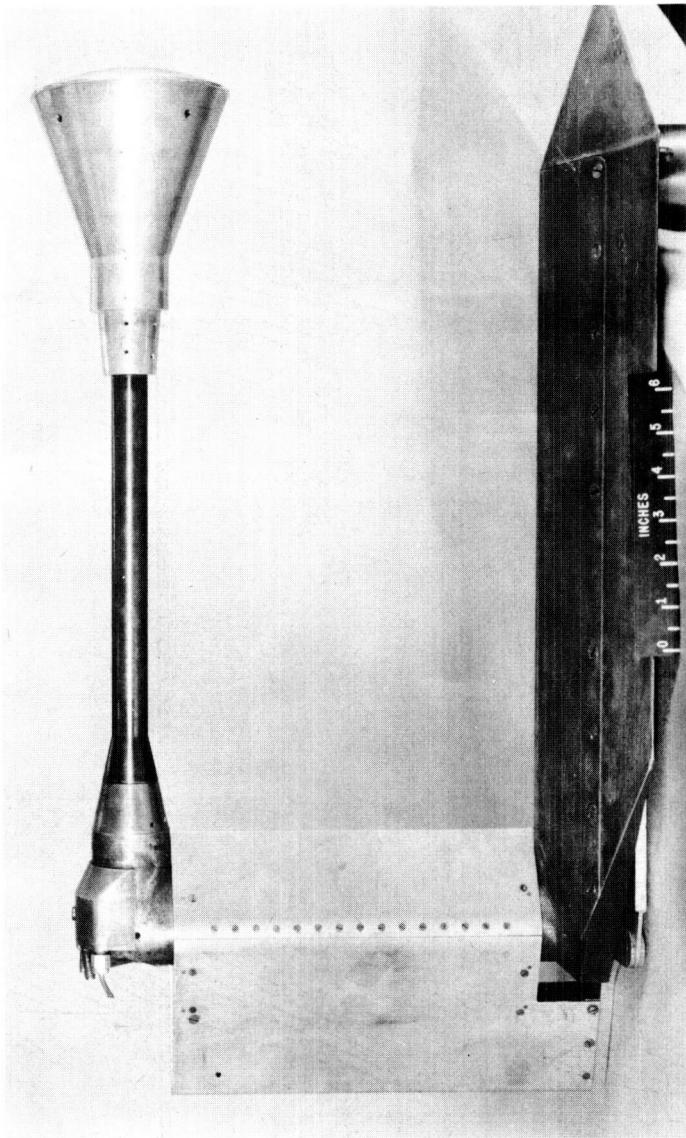
Figure 5.- Location of pressure orifices and dimensions of the 1/14.9-scale model of the Mercury capsule in the reentry configuration.

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Figure 6.- The 1/14.9-scale model of the Mercury capsule mounted on the support system for the Langley 20-inch hypersonic tunnel.

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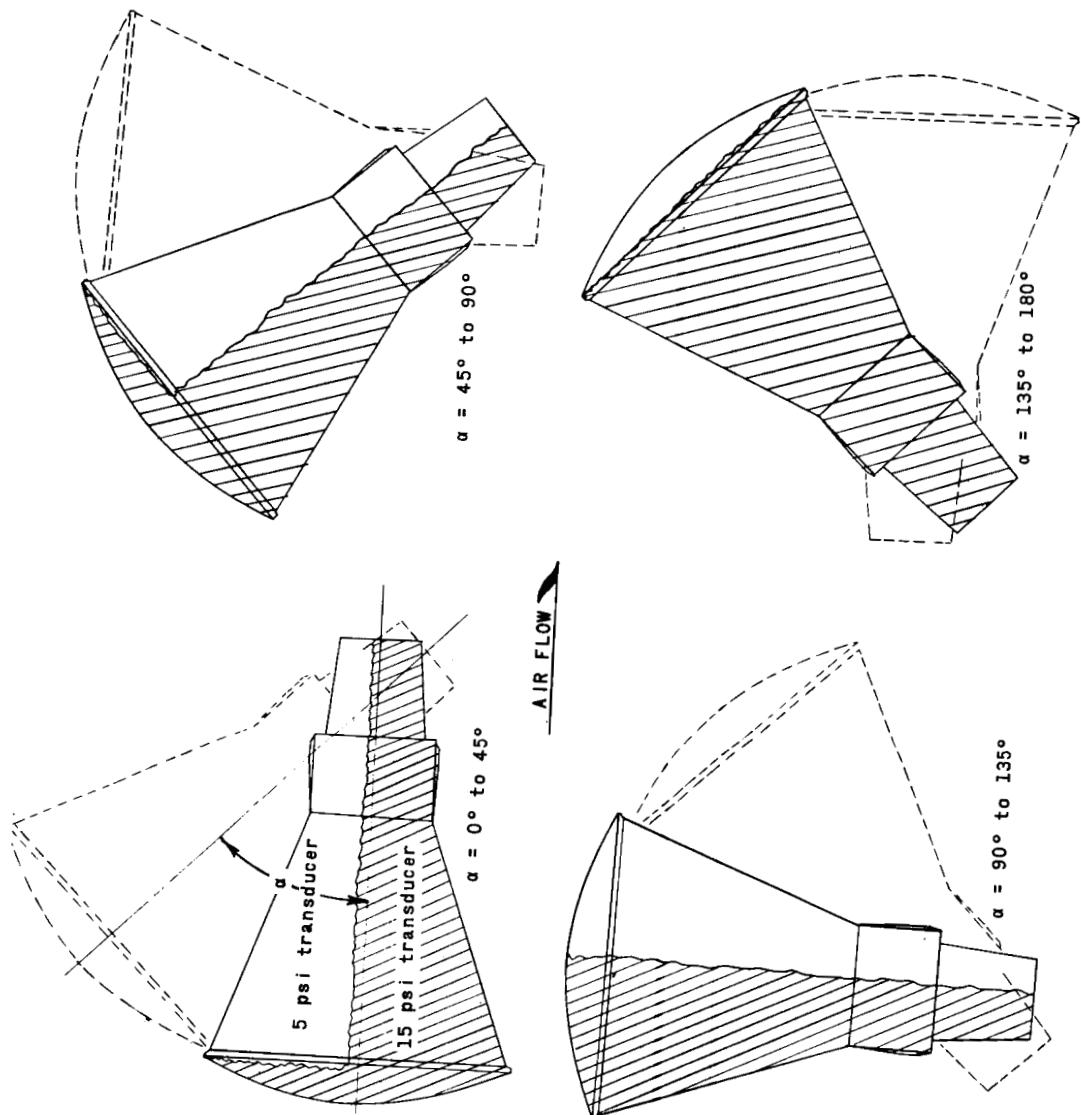


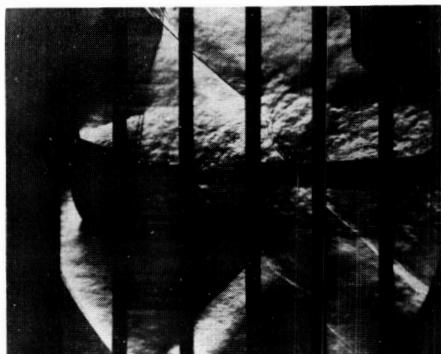
Figure 7.- Regions covered by electrical transducers through the angle-of-attack range for the 1/9-scale model of the Project Mercury capsule.

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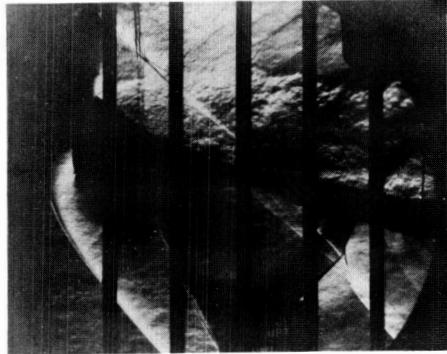
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$\alpha = 0^\circ$



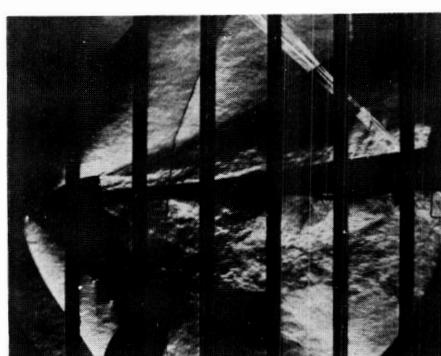
$\alpha = 15^\circ$



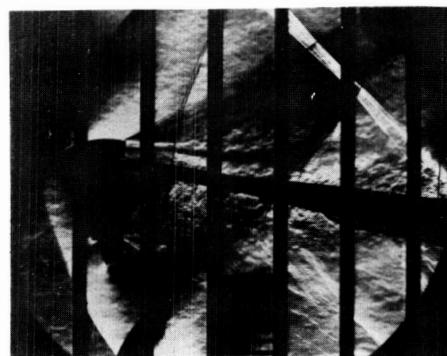
$\alpha = 30^\circ$



$\alpha = 40^\circ$



$\alpha = 60^\circ$



$\alpha = 75^\circ$

(a)  $M = 1.60.$

L-60-4282

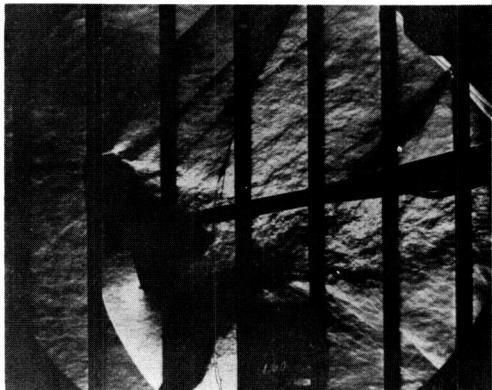
Figure 8.- Typical schlieren photographs of exit and reentry configurations of the 1/9-scale model.

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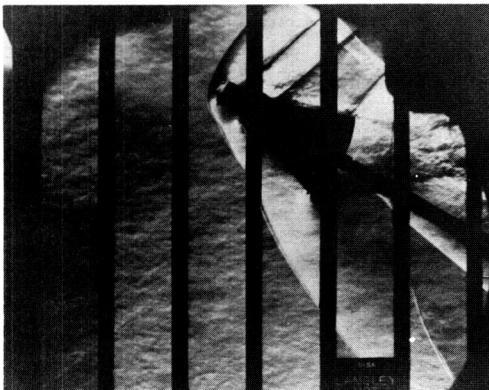
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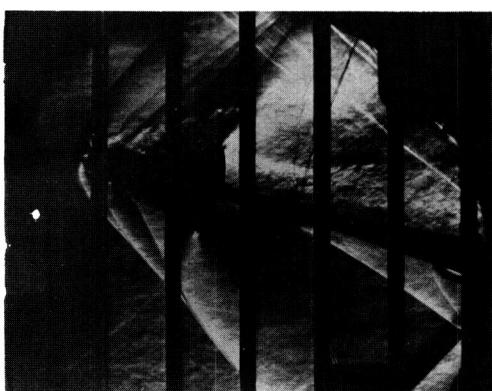
45



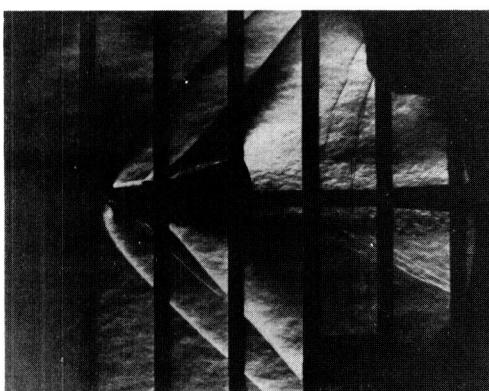
$\alpha = 125^\circ$



$\alpha = 150^\circ$



$\alpha = 165^\circ$



$\alpha = 180^\circ$

(a) Concluded.

L-60-4283

Figure 8.- Continued.

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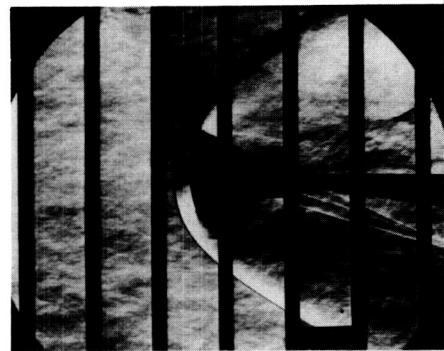
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$\alpha = 0^\circ$



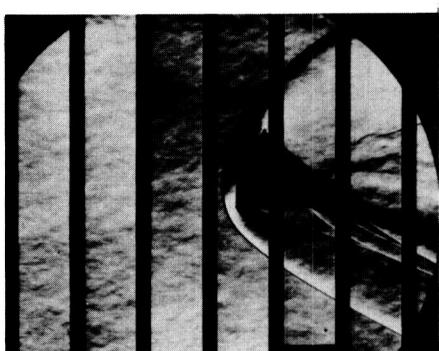
$\alpha = 5^\circ$



$\alpha = 10^\circ$



$\alpha = 15^\circ$



$\alpha = 20^\circ$



$\alpha = 25^\circ$

(b)  $M = 2.85.$

L-60-4284

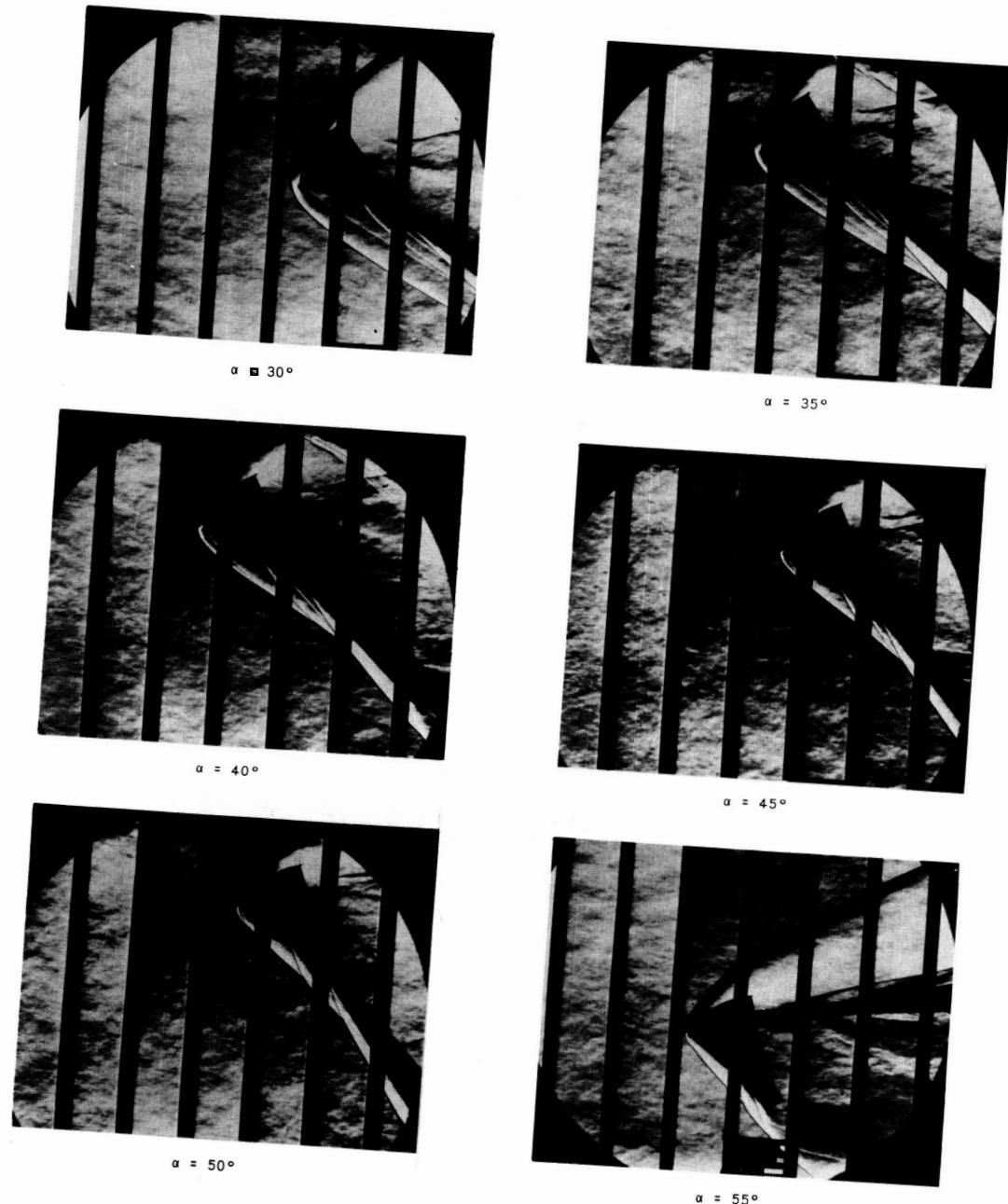
Figure 8.- Continued.

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(b) Continued.

Figure 8.- Continued.

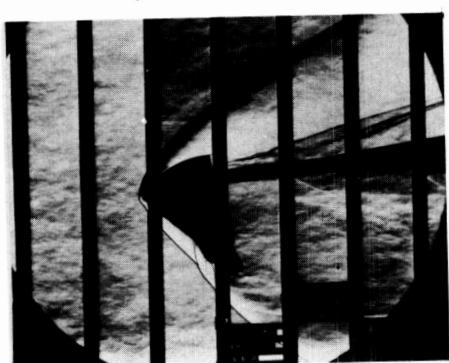
L-60-4285

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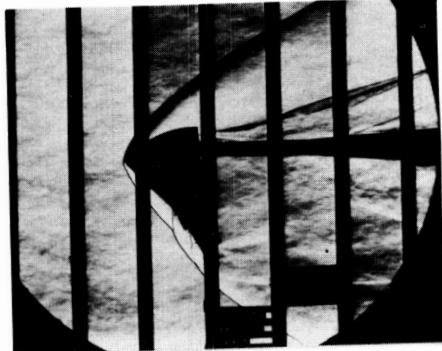
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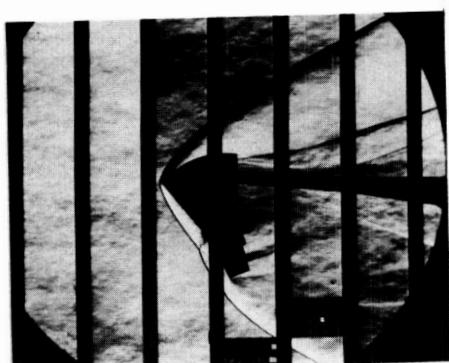
48



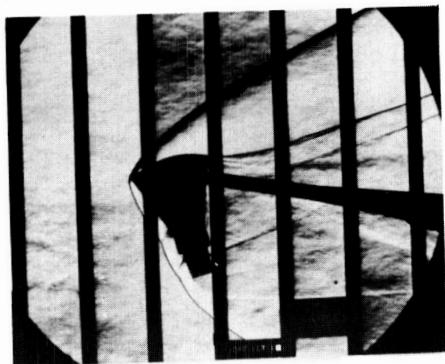
$\alpha = 60^\circ$



$\alpha = 65^\circ$



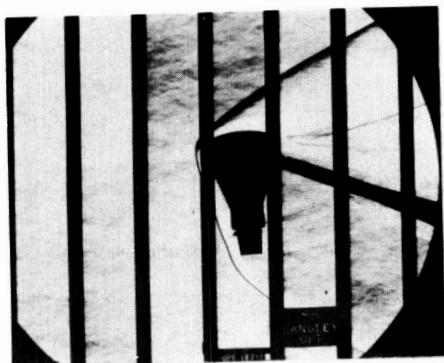
$\alpha = 70^\circ$



$\alpha = 75^\circ$



$\alpha = 80^\circ$



$\alpha = 85^\circ$

(b) Continued.

L-60-4286

Figure 8.- Continued.

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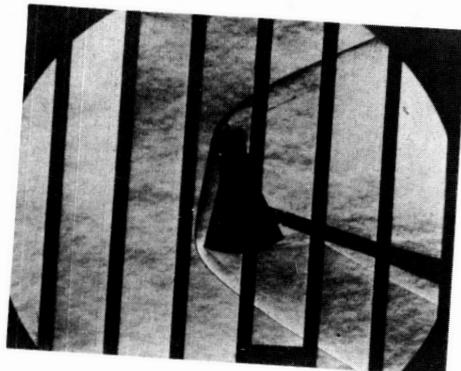
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$\alpha = 95^\circ$



$\alpha = 100^\circ$



$\alpha = 105^\circ$



$\alpha = 110^\circ$



$\alpha = 115^\circ$



$\alpha = 120^\circ$

(b) Continued.

L-60-4287

Figure 8.- Continued.

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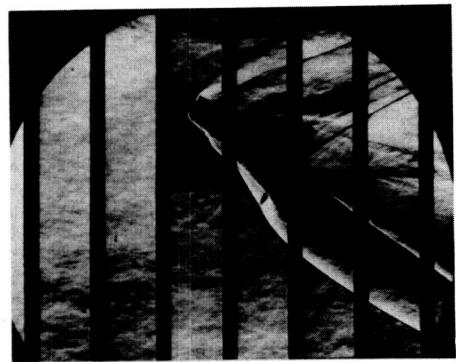
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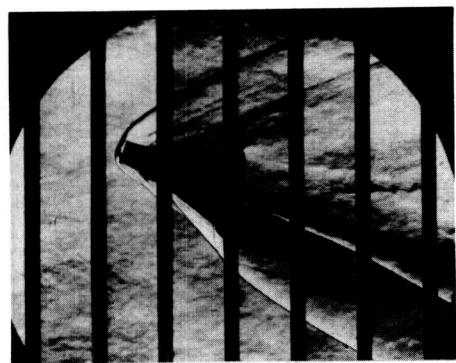
$\alpha = 125^\circ$



$\alpha = 150^\circ$



$\alpha = 155^\circ$



$\alpha = 160^\circ$



$\alpha = 165^\circ$



$\alpha = 170^\circ$

(b) Continued.

L-60-4288

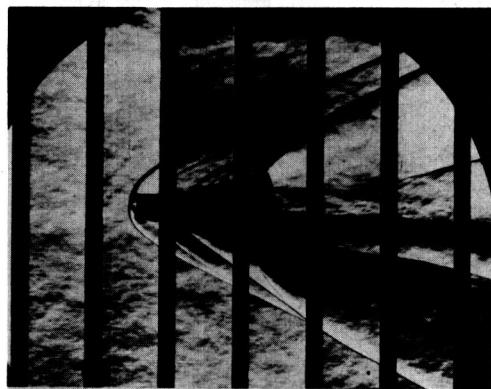
Figure 8.- Continued.

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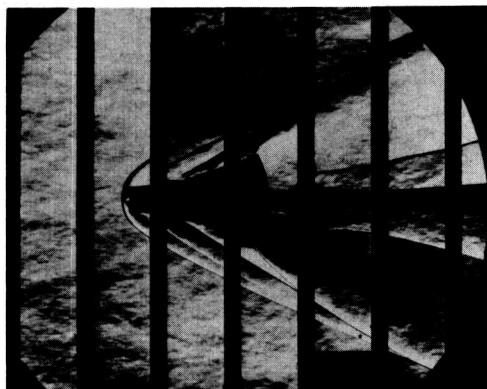
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51



$\alpha = 175^\circ$



$\alpha = 180^\circ$

(b) Concluded.

L-60-4289

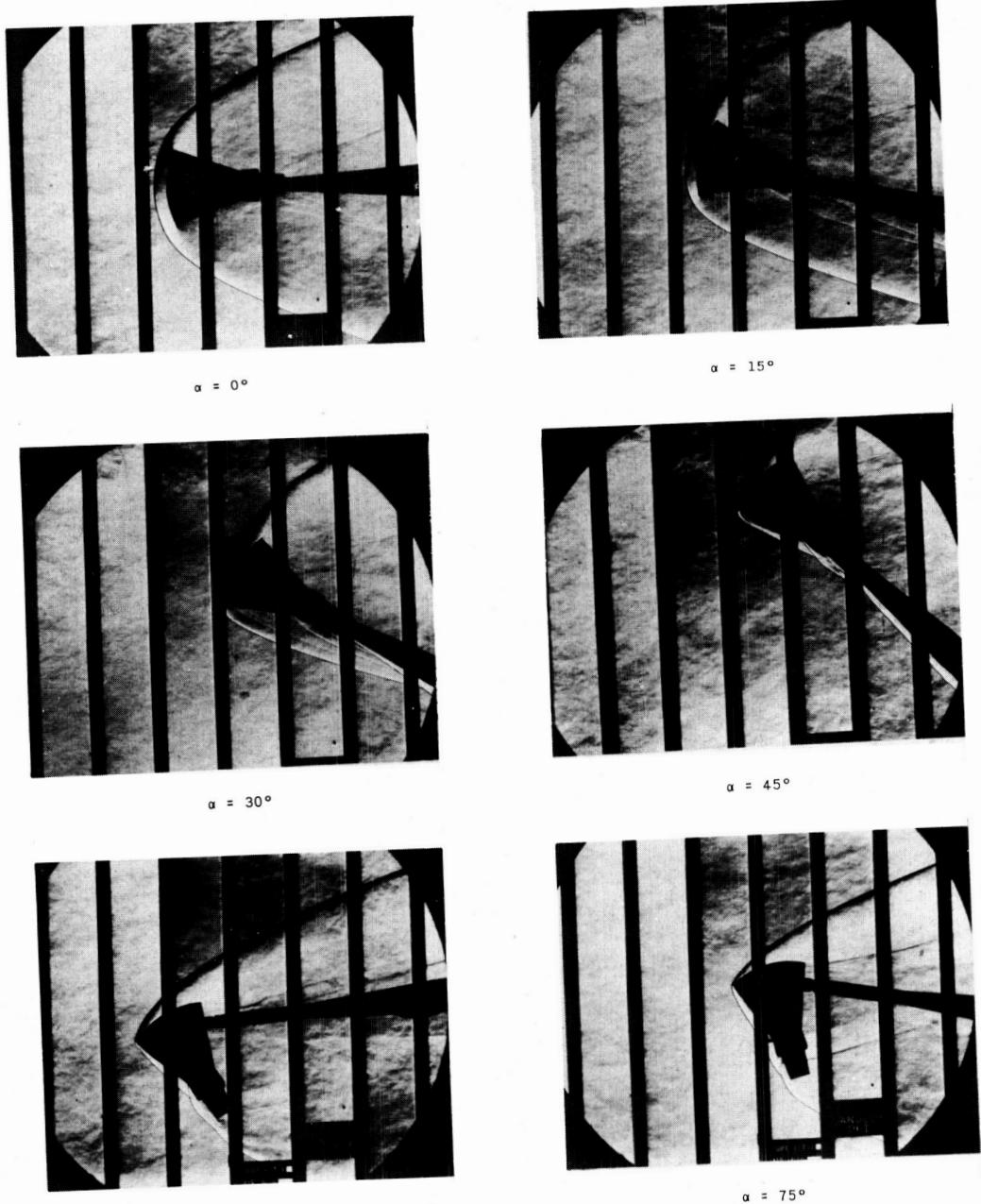
Figure 8.- Continued.

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(c)  $M = 4.65$ .

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Figure 8.- Continued.

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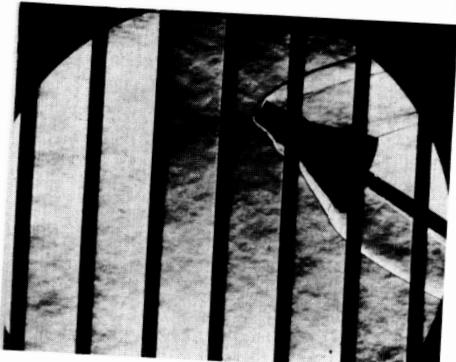
53



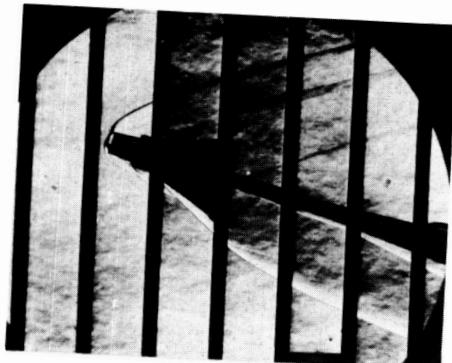
$\alpha = 105^\circ$



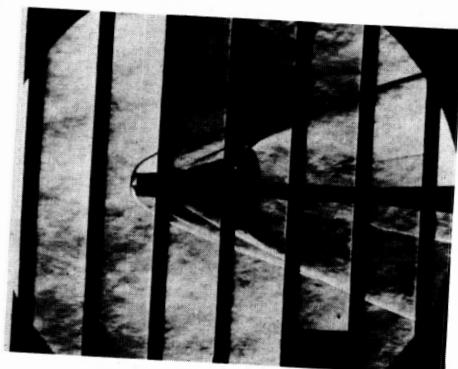
$\alpha = 120^\circ$



$\alpha = 150^\circ$



$\alpha = 165^\circ$



$\alpha = 180^\circ$

(c) Concluded.

L-60-4291

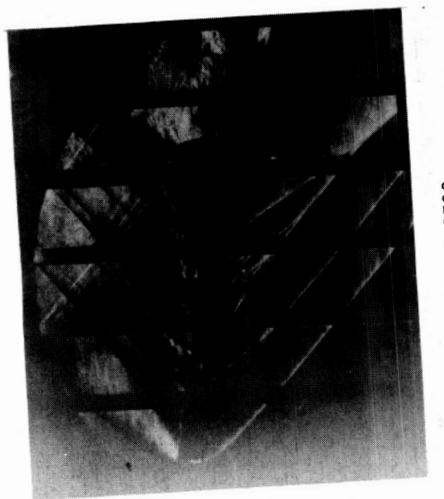
Figure 8.- Concluded.

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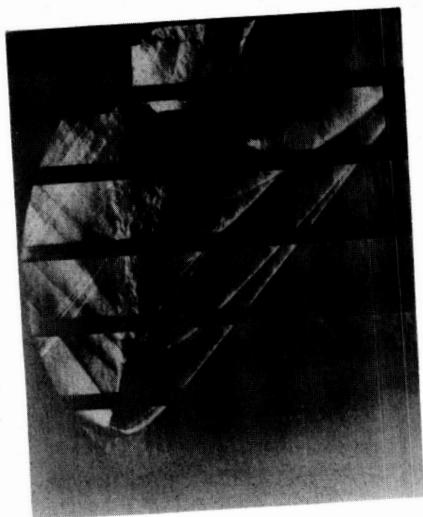
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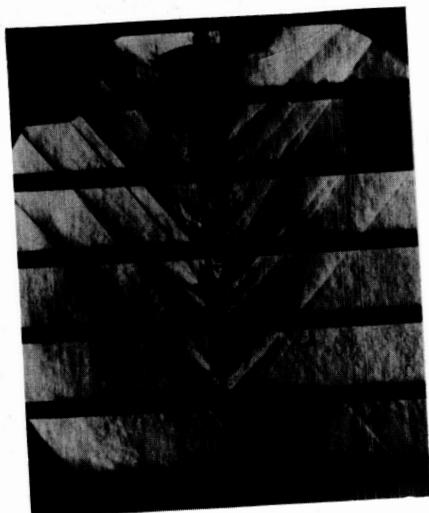
54



$\alpha = 170^\circ$



$\alpha = 160^\circ$



$\alpha = 180^\circ$

(a)  $M = 1.60$ .

L-60-4292

Figure 9.- Typical schlieren photographs of escape configuration of the 1/9-scale model.

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$\alpha = 160^\circ$



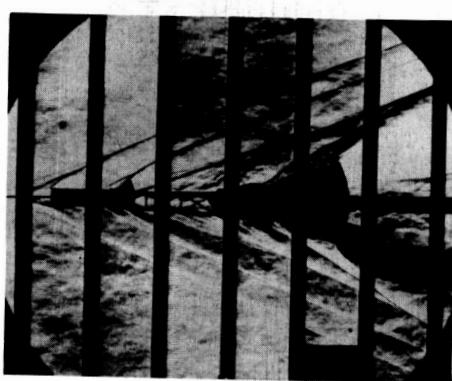
$\alpha = 165^\circ$



$\alpha = 170^\circ$



$\alpha = 175^\circ$



$\alpha = 180^\circ$

(b)  $M = 2.85.$

L-60-4293

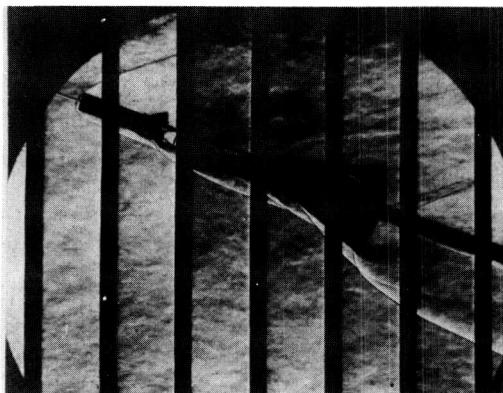
Figure 9.- Continued.

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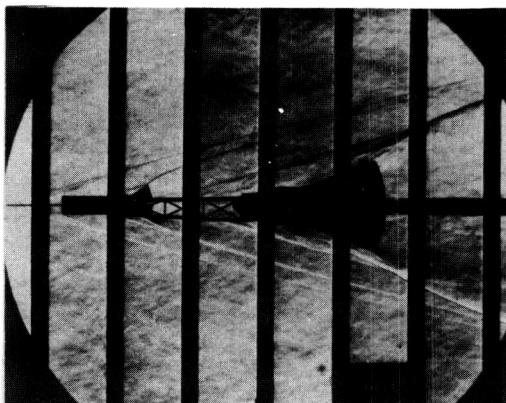
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$\alpha = 160^\circ$



$\alpha = 170^\circ$



$\alpha = 180^\circ$

(c)  $M = 4.65$ .

L-60-4294

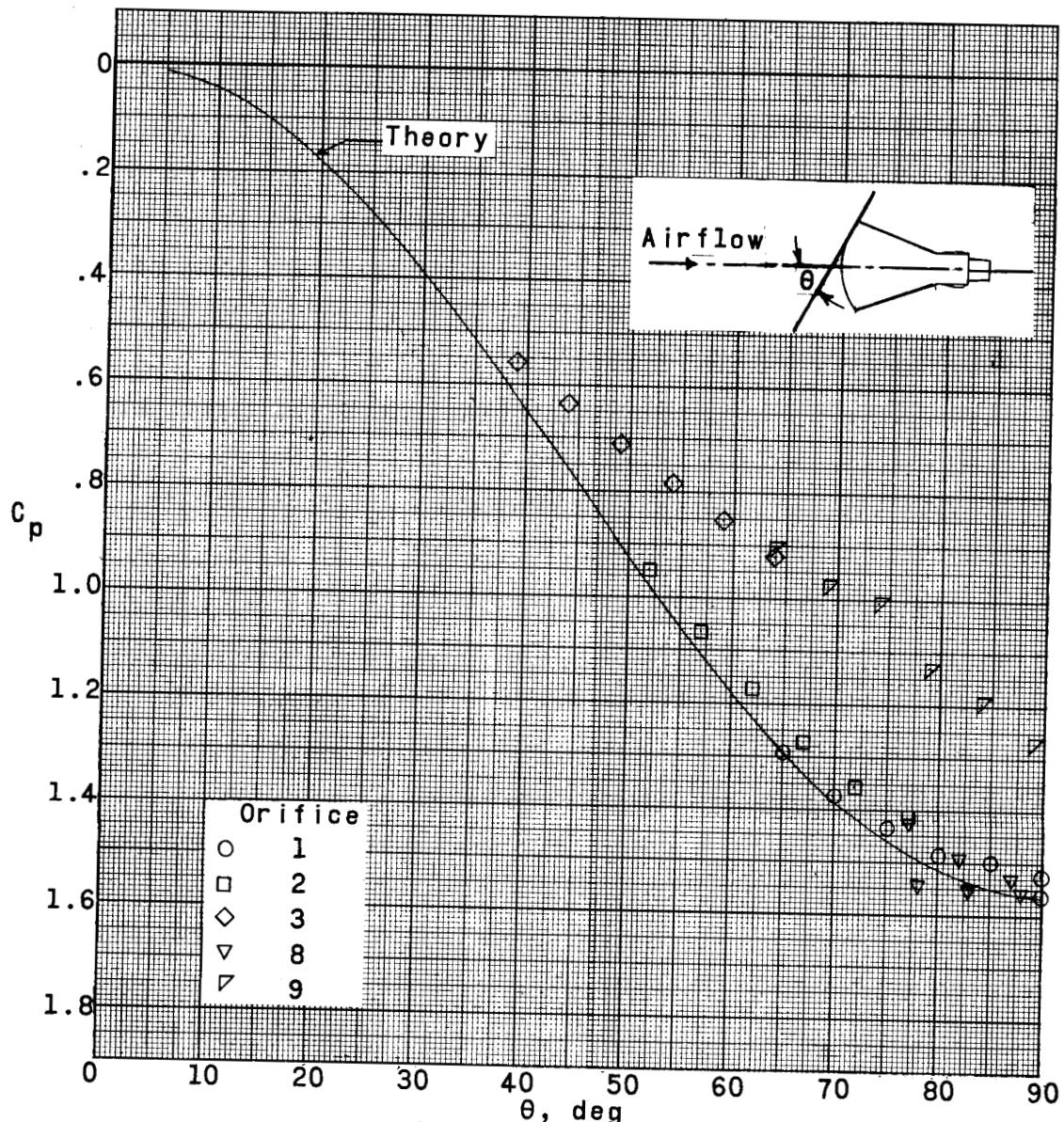
Figure 9.- Concluded.

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(a)  $M = 1.60; R = 2.68 \times 10^6$ .

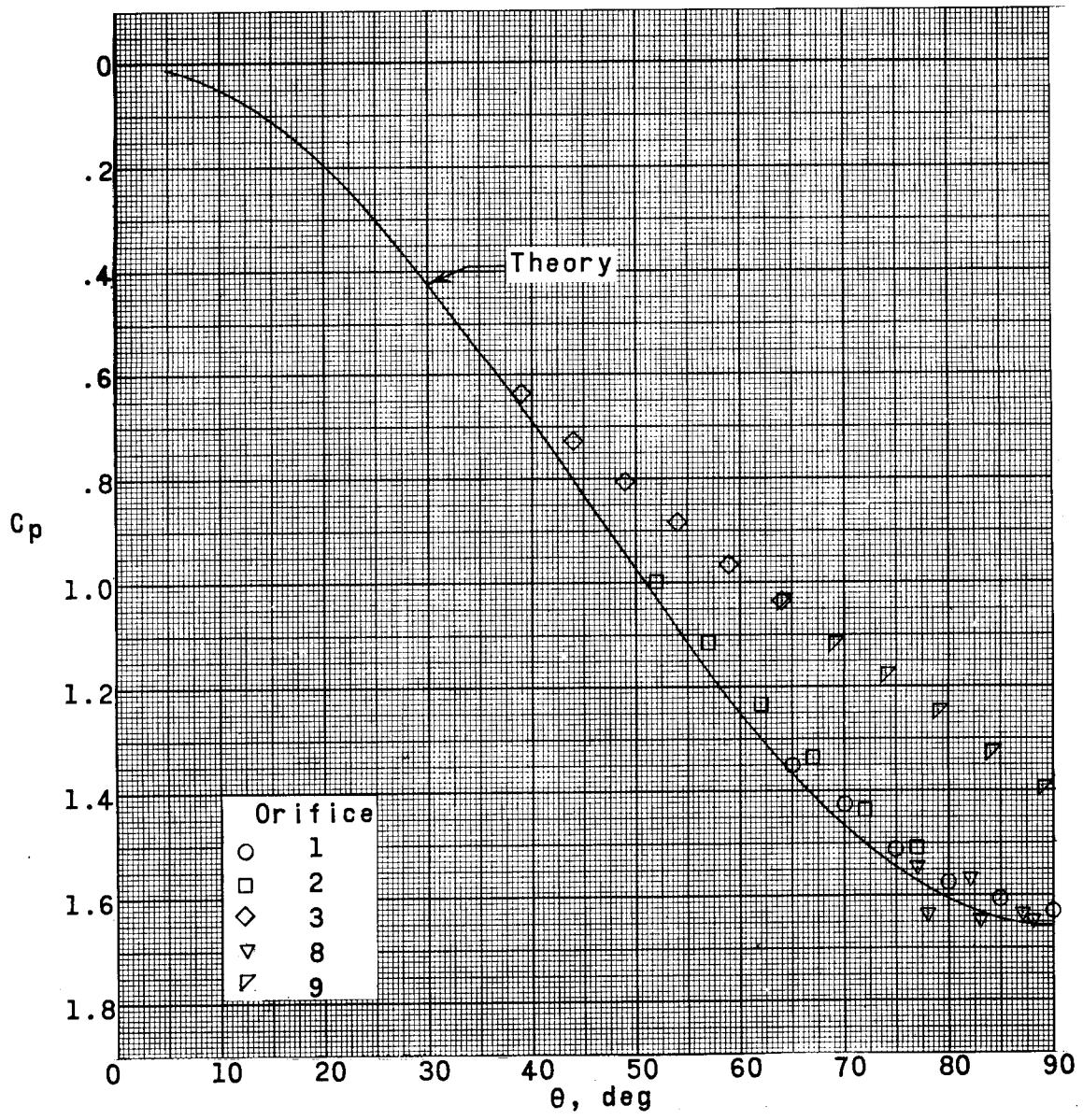
Figure 10.- Comparison of measured pressure coefficient with Newtonian theory on ablation shield for reentry configurations of the 1/9-scale model and the 1/14.9-scale model.

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(b)  $M = 2.00$ ;  $R = 2.50 \times 10^6$ .

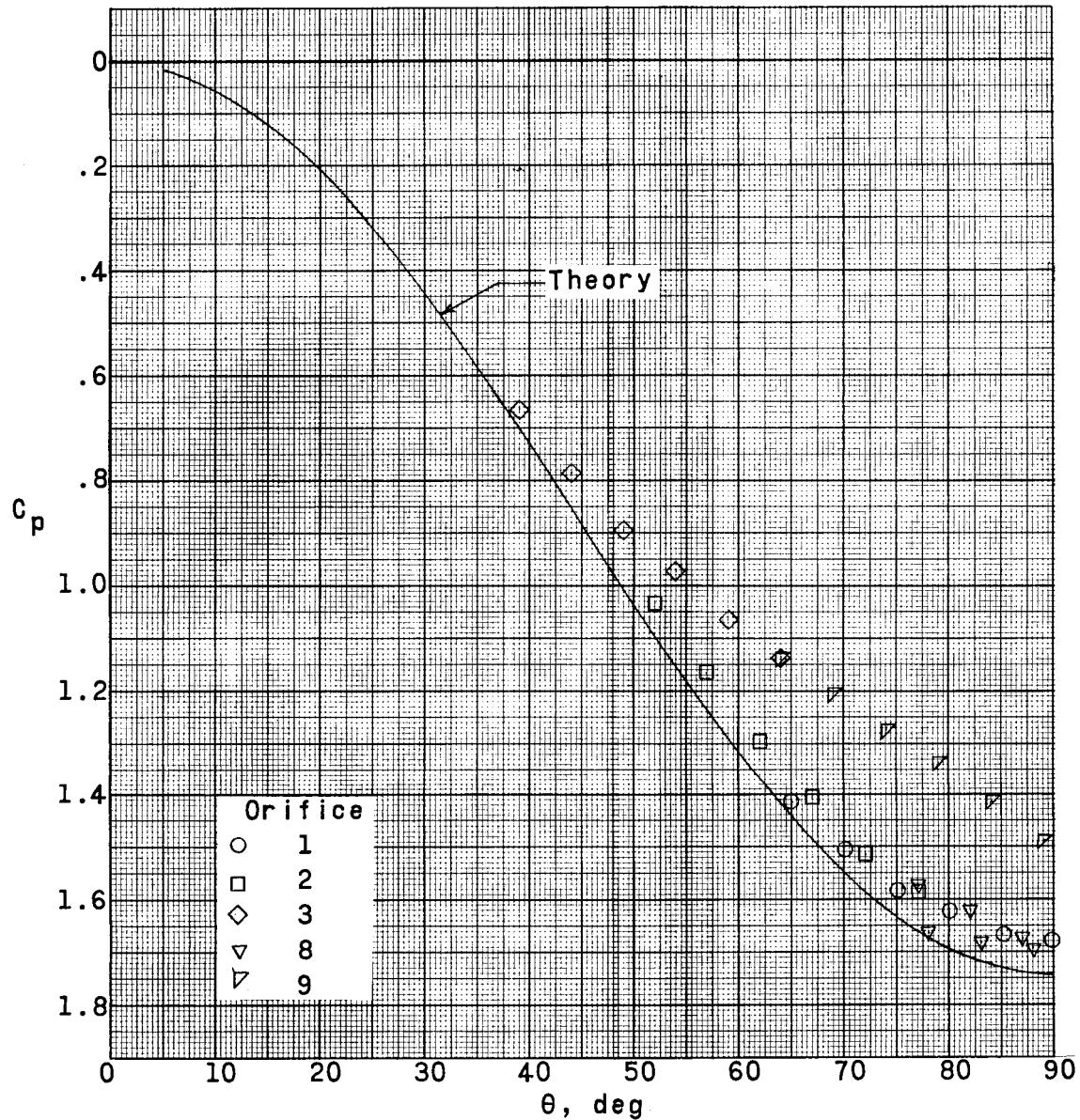
Figure 10.- Continued.

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(c)  $M = 2.85; R = 2.38 \times 10^6$ .

Figure 10.- Continued.

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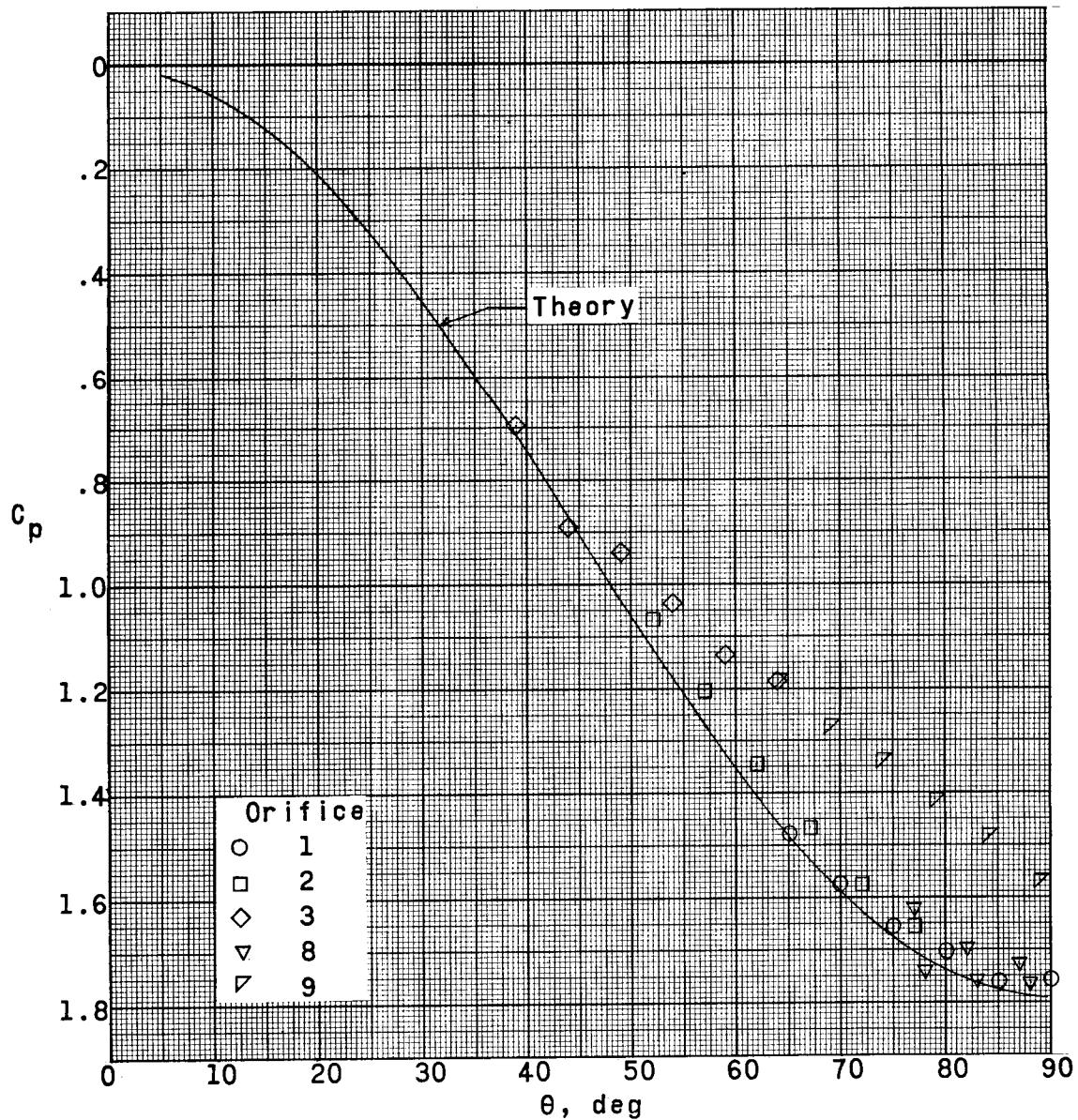
(d)  $M = 3.94$ ;  $R = 2.38 \times 10^6$ .

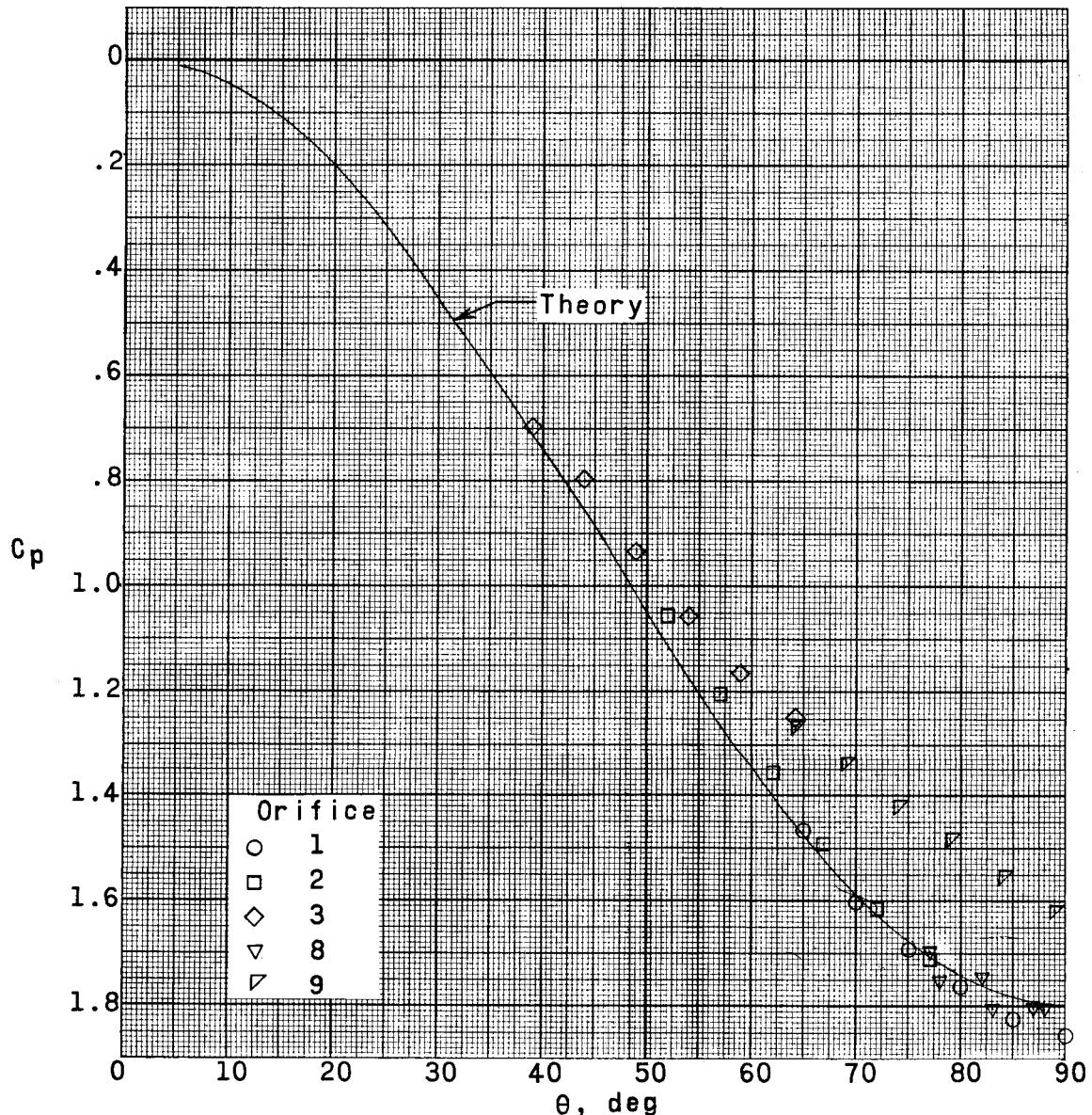
Figure 10.- Continued.

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(e)  $M = 4.65; R = 2.03 \times 10^6$ .

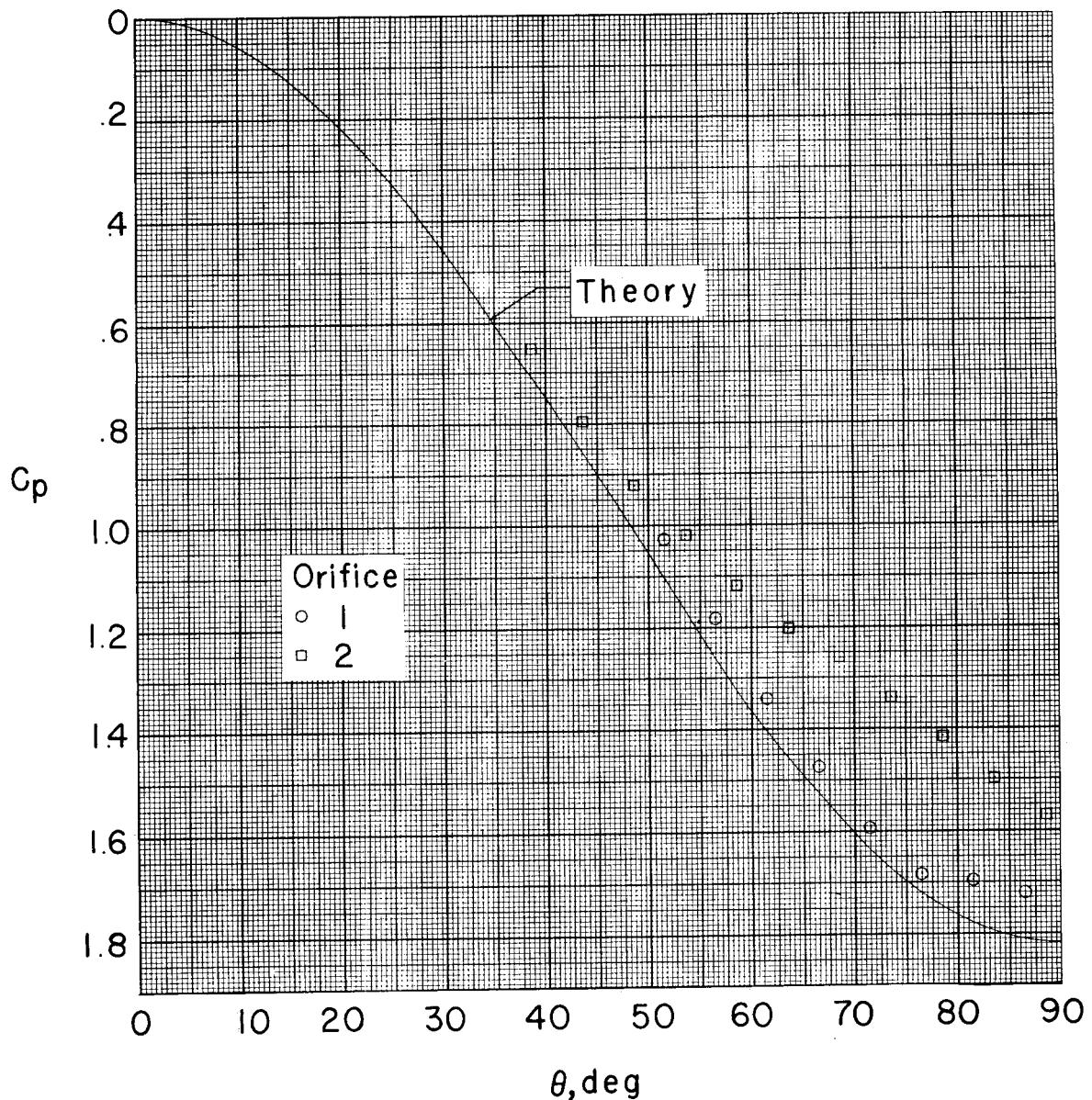
Figure 10.- Continued.

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(f)  $M = 6.01; R = 2.52 \times 10^6$ .

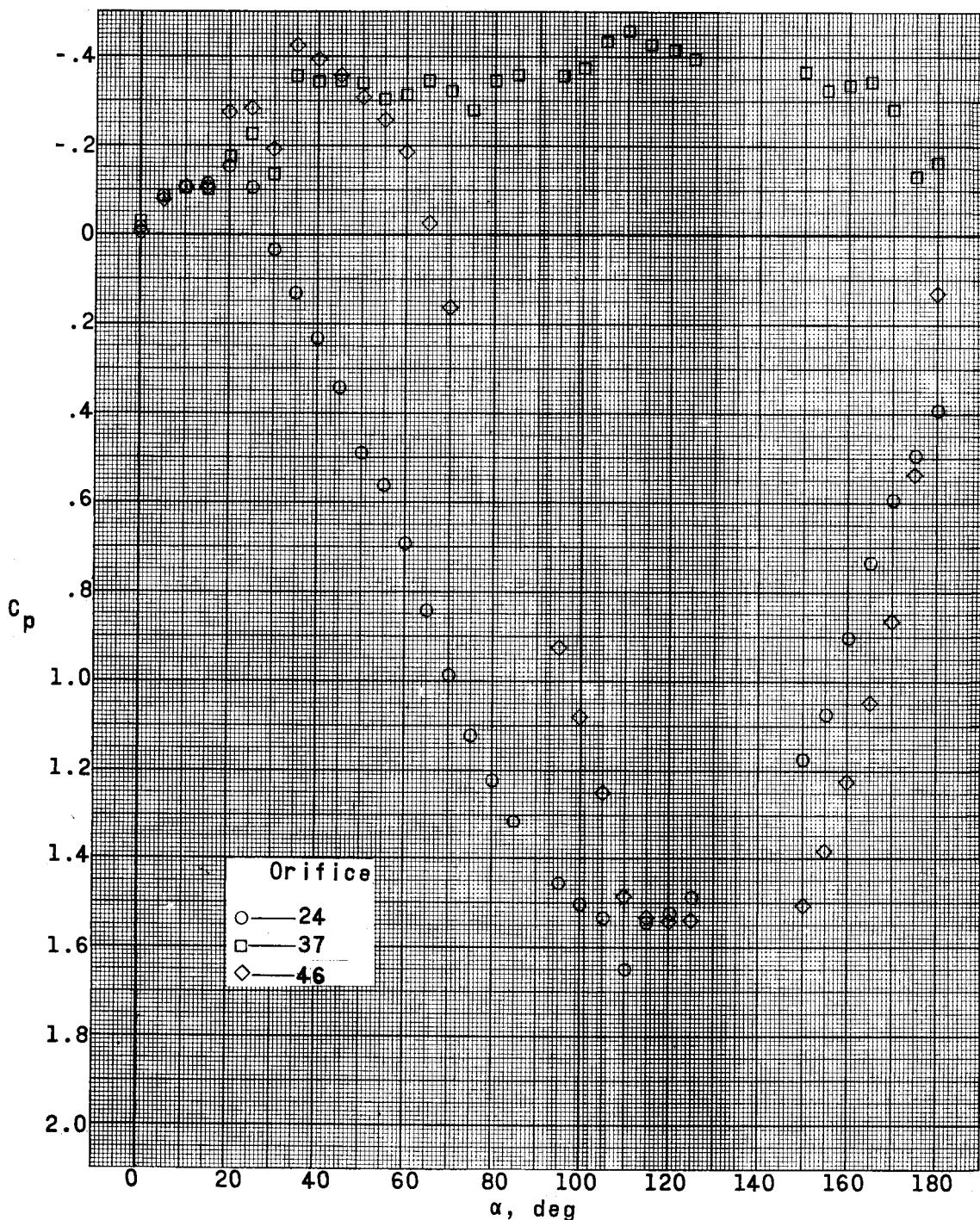
Figure 10.- Concluded.

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(a)  $M = 1.60; R = 2.80 \times 10^6$ .

Figure 11.- Variation of pressure coefficient with angle of attack for typical orifices of the 1/9-scale model through the complete angle-of-attack range.

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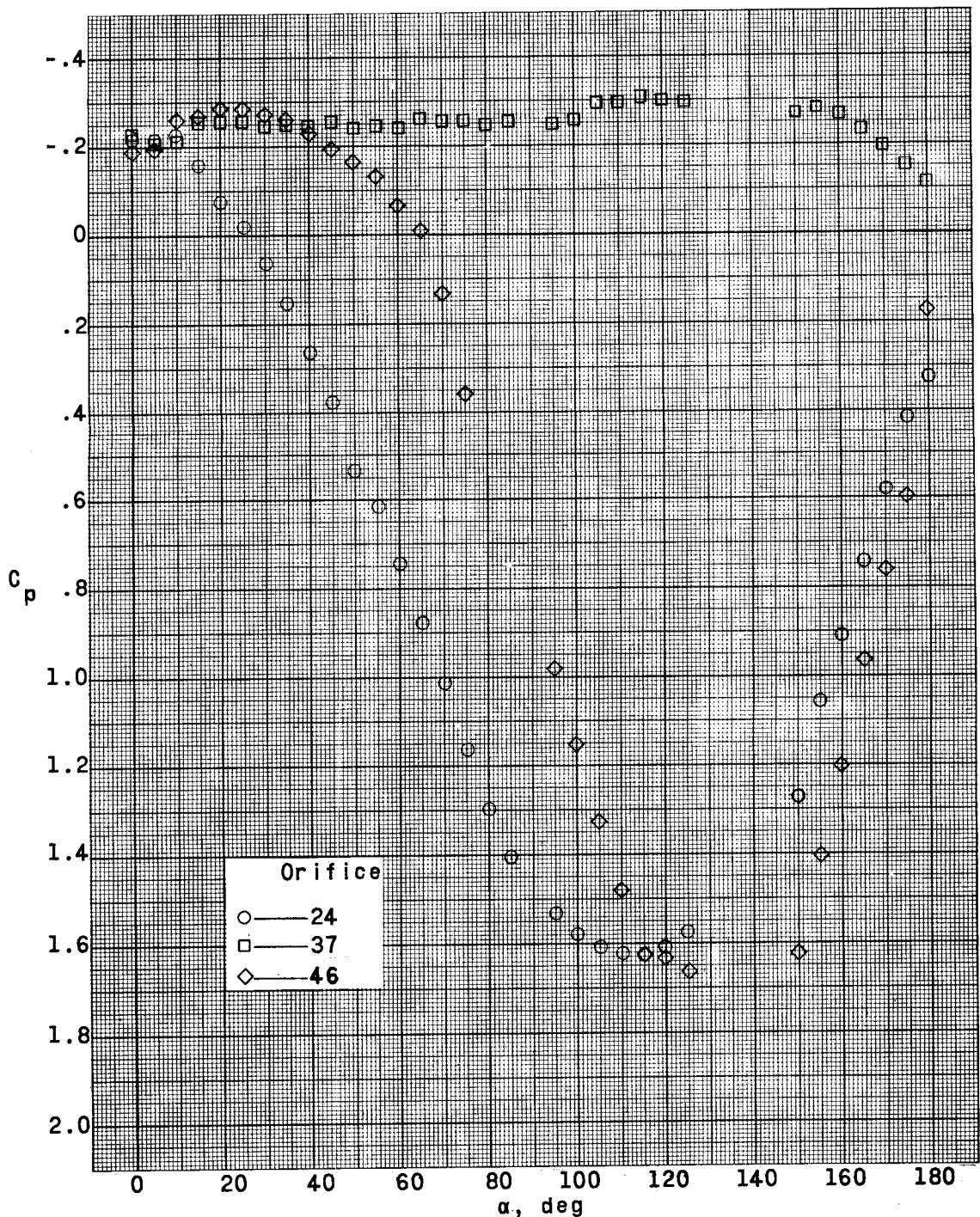
(b)  $M = 2.00$ ;  $R = 2.50 \times 10^6$ .

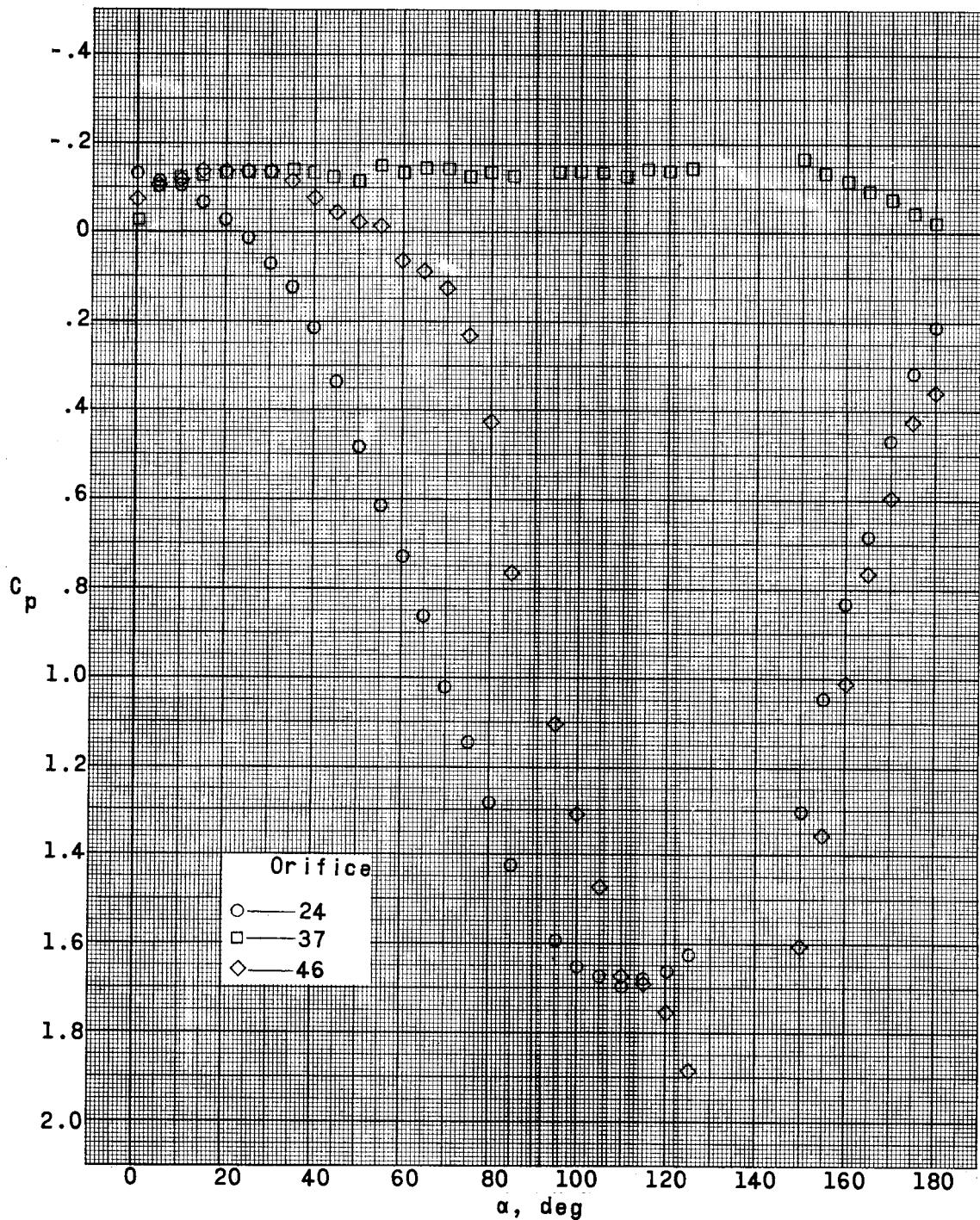
Figure 11.- Continued.

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(c)  $M = 2.85$ ;  $R = 2.38 \times 10^6$ .

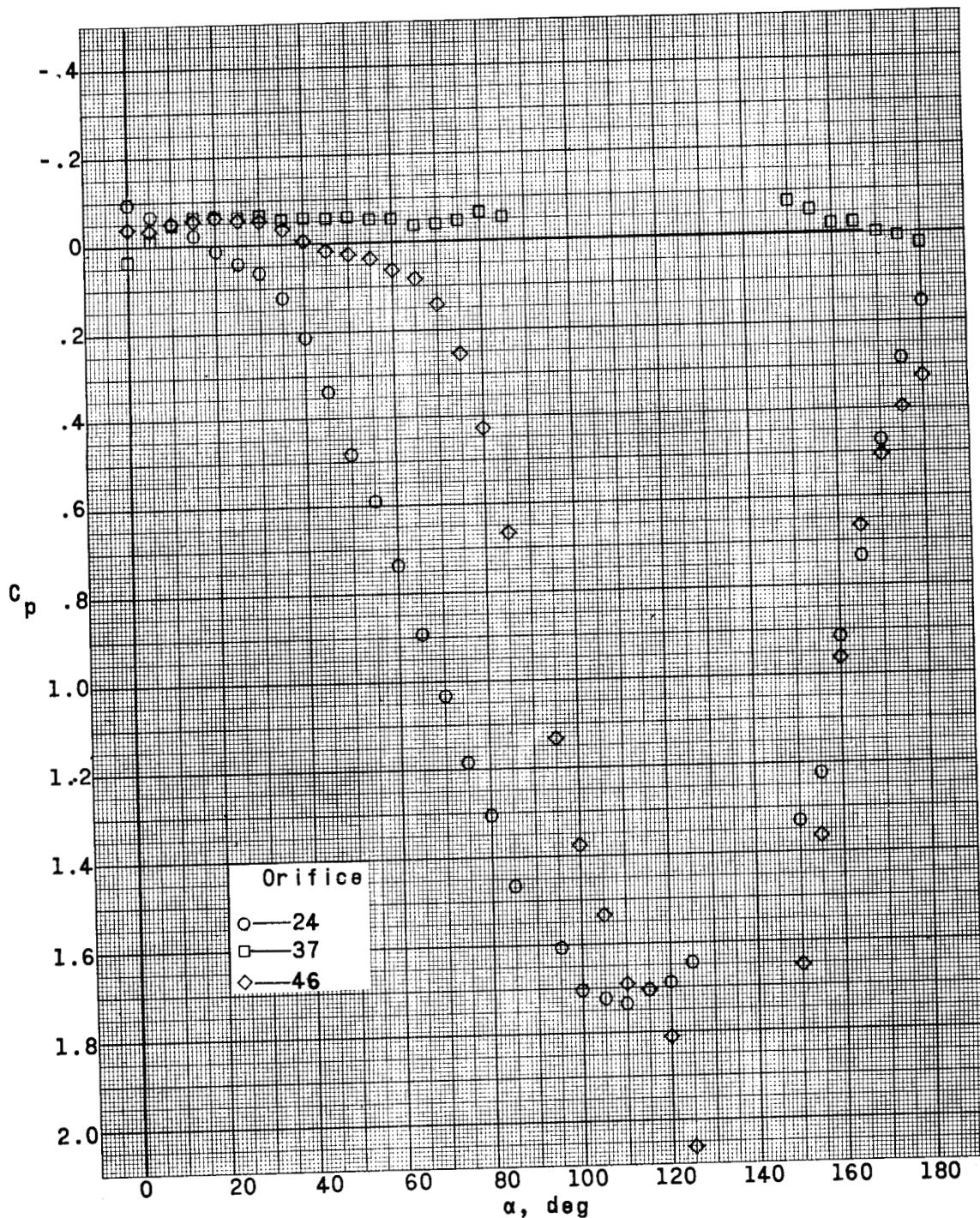
Figure 11.- Continued.

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(a)  $M = 3.94$ ;  $R = 2.20 \times 10^6$ .

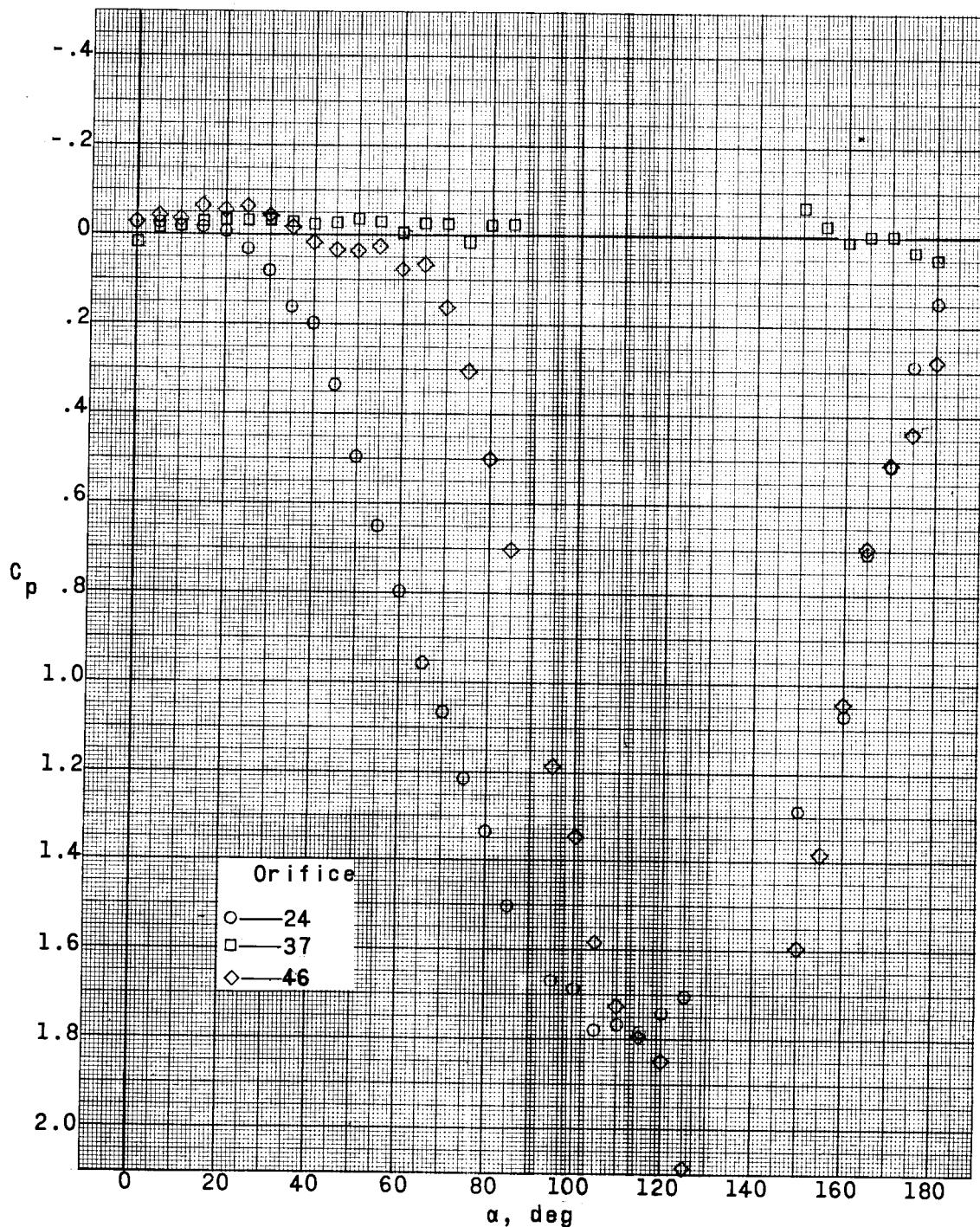
Figure 11.- Continued.

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(e)  $M = 4.65$ ;  $R = 2.05 \times 10^6$ .

Figure 11.- Concluded.

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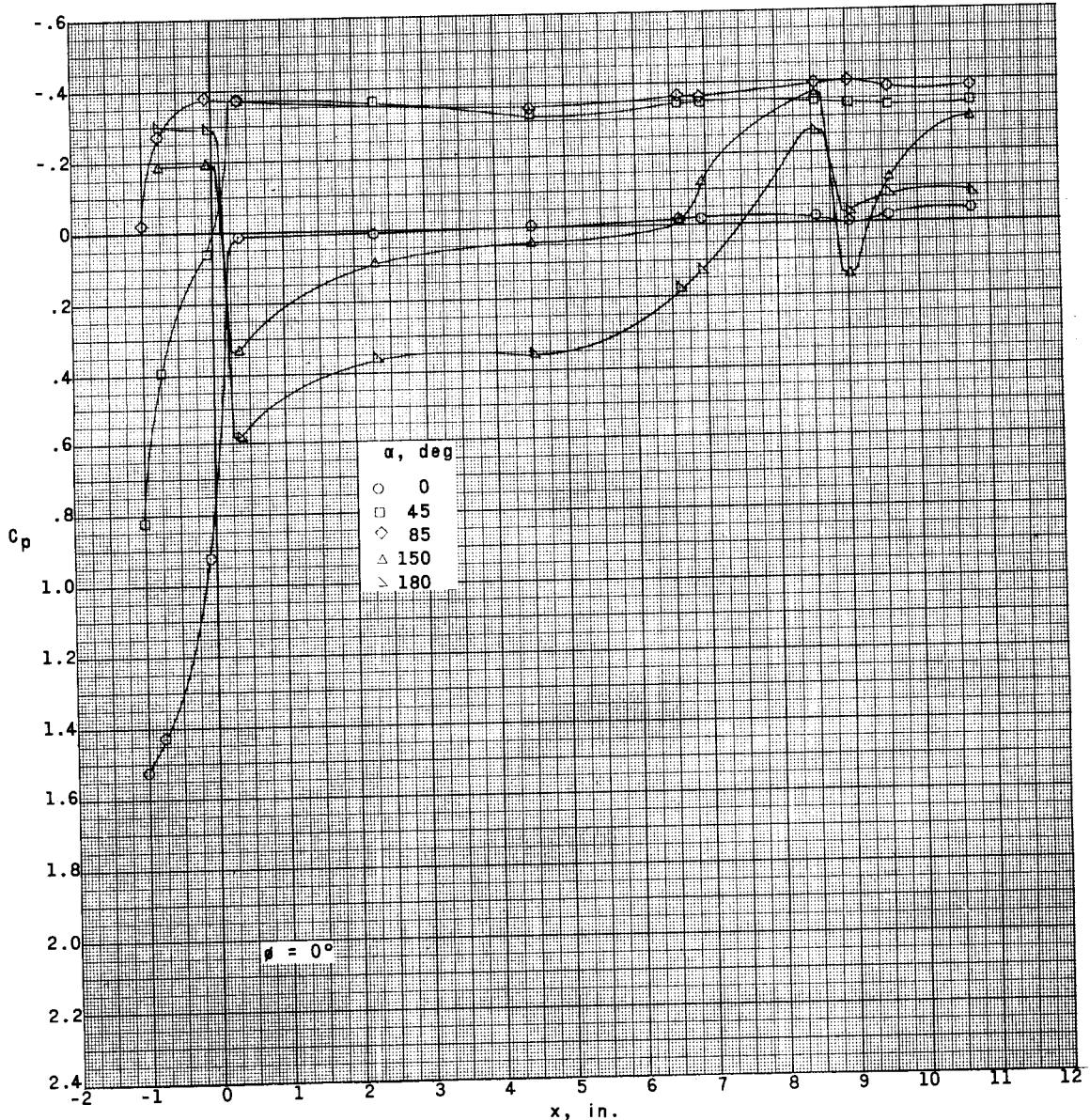
(a)  $M = 1.60.$ 

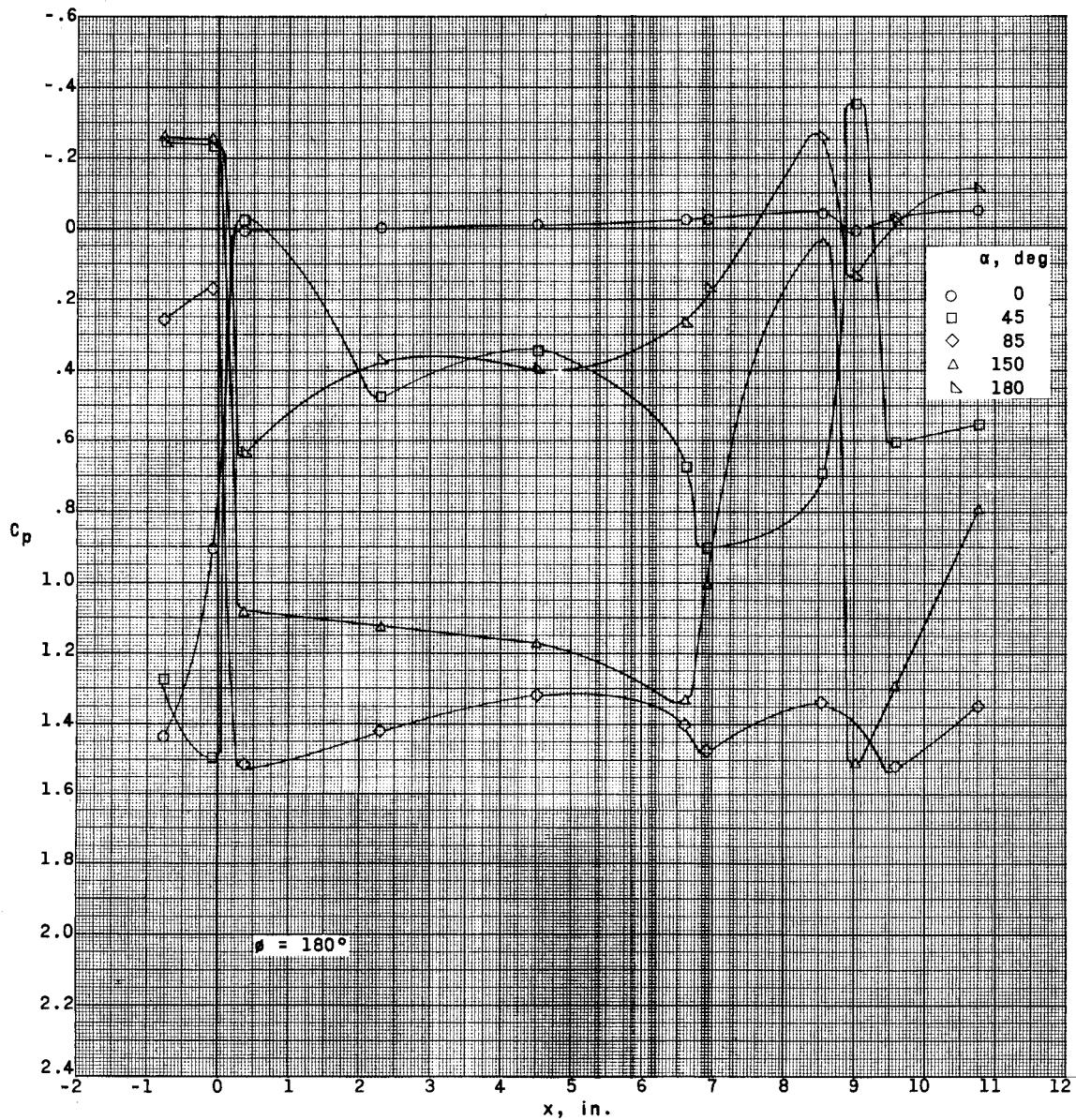
Figure 12.- Effect of angle of attack on the pressure distribution on exit and reentry configuration of the 1/9-scale model at meridian angles of  $0^\circ$  and  $180^\circ$ .

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(a) Concluded.

Figure 12.- Continued.

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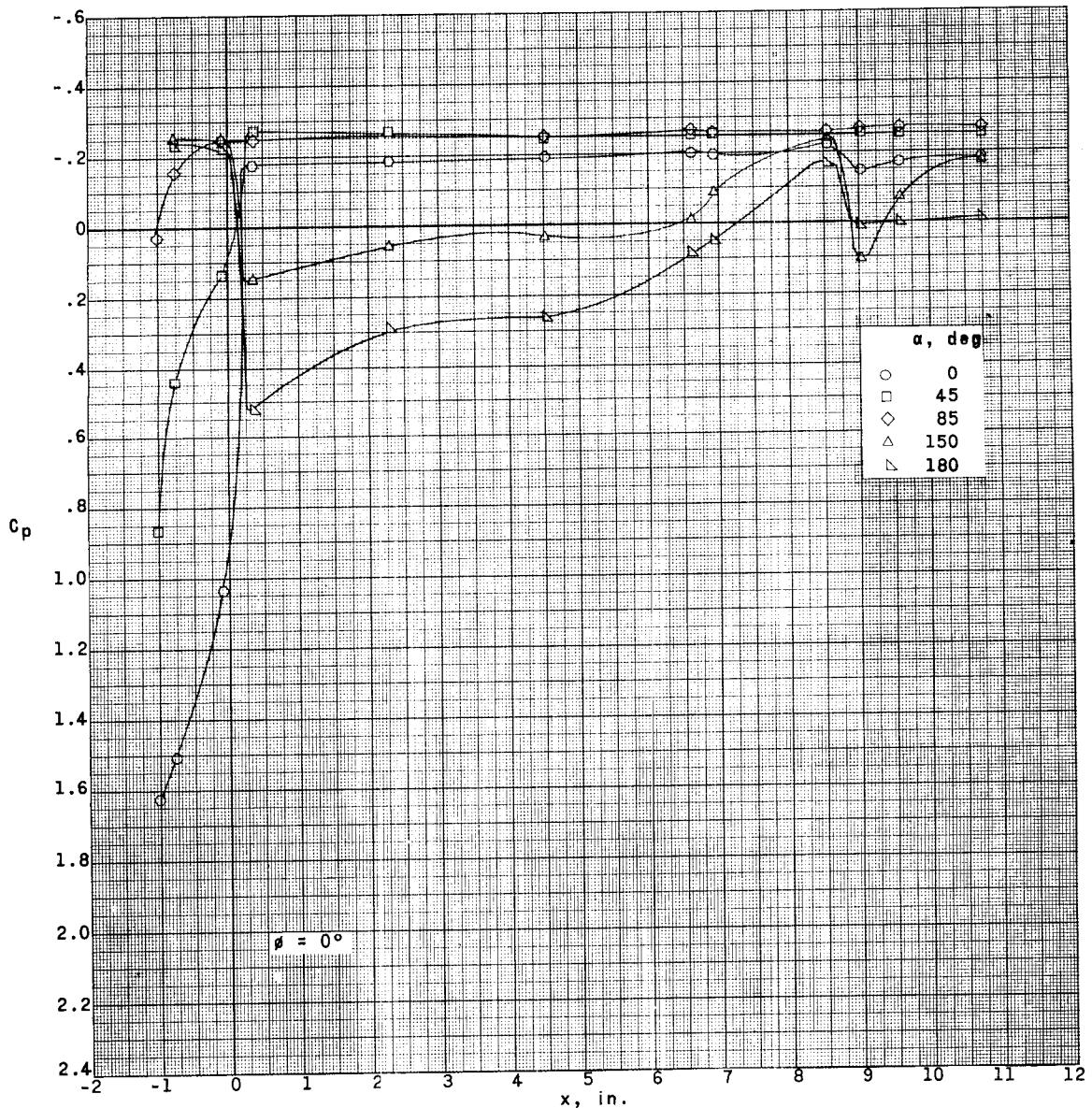
(b)  $M = 2.00$ .

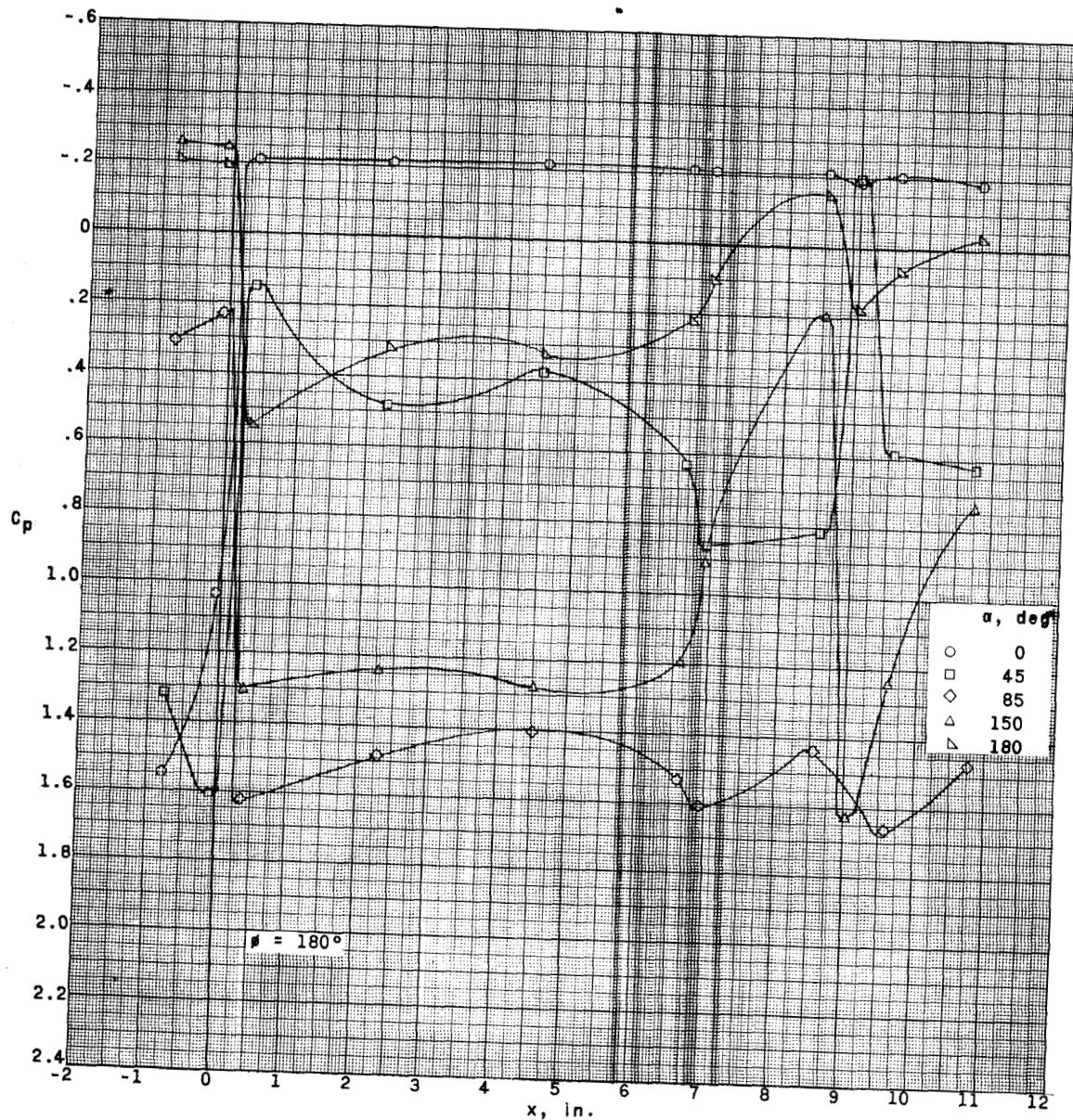
Figure 12.- Continued.

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(b) Concluded.

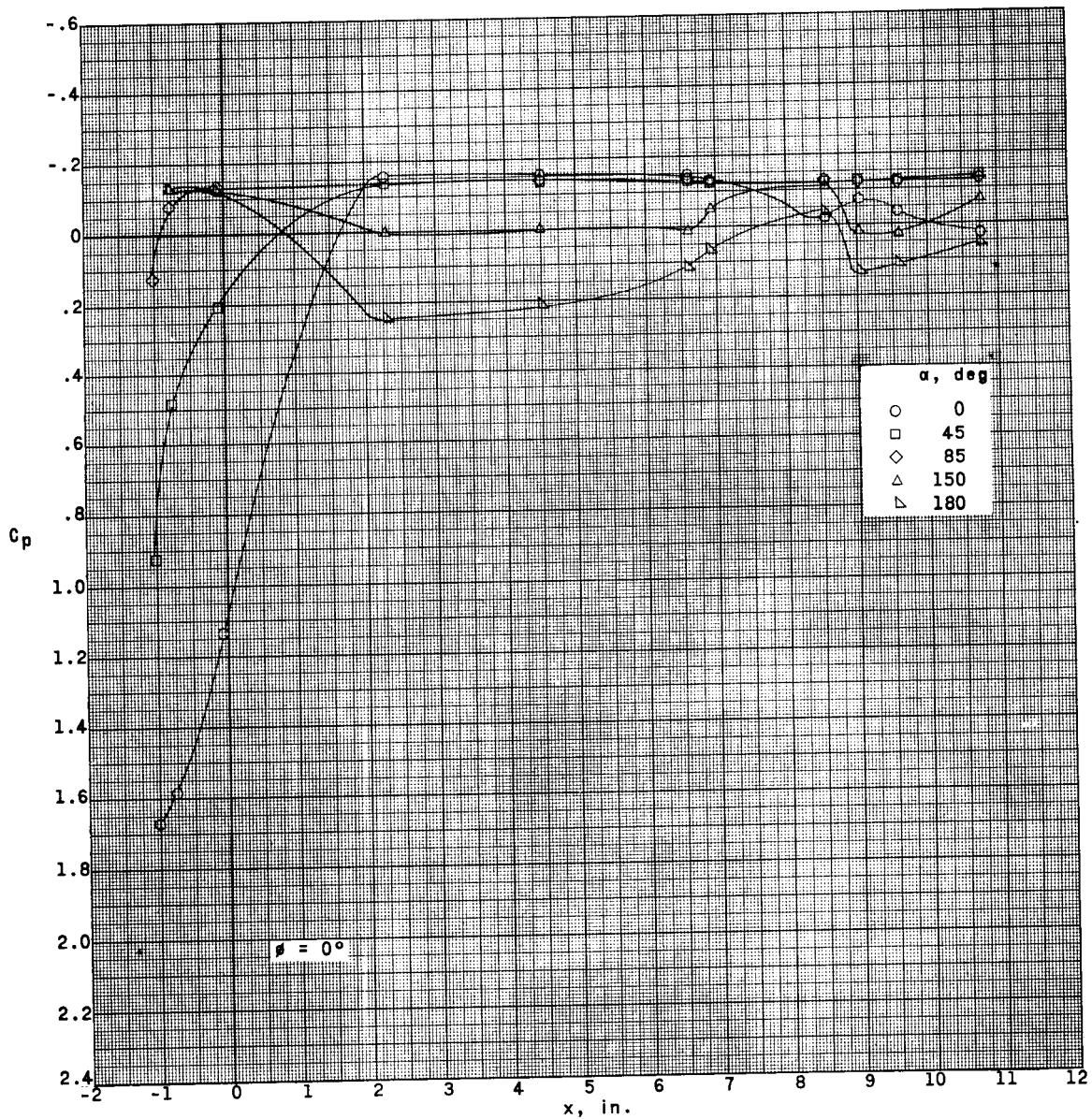
Figure 12.- Continued.

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(c)  $M = 2.85.$

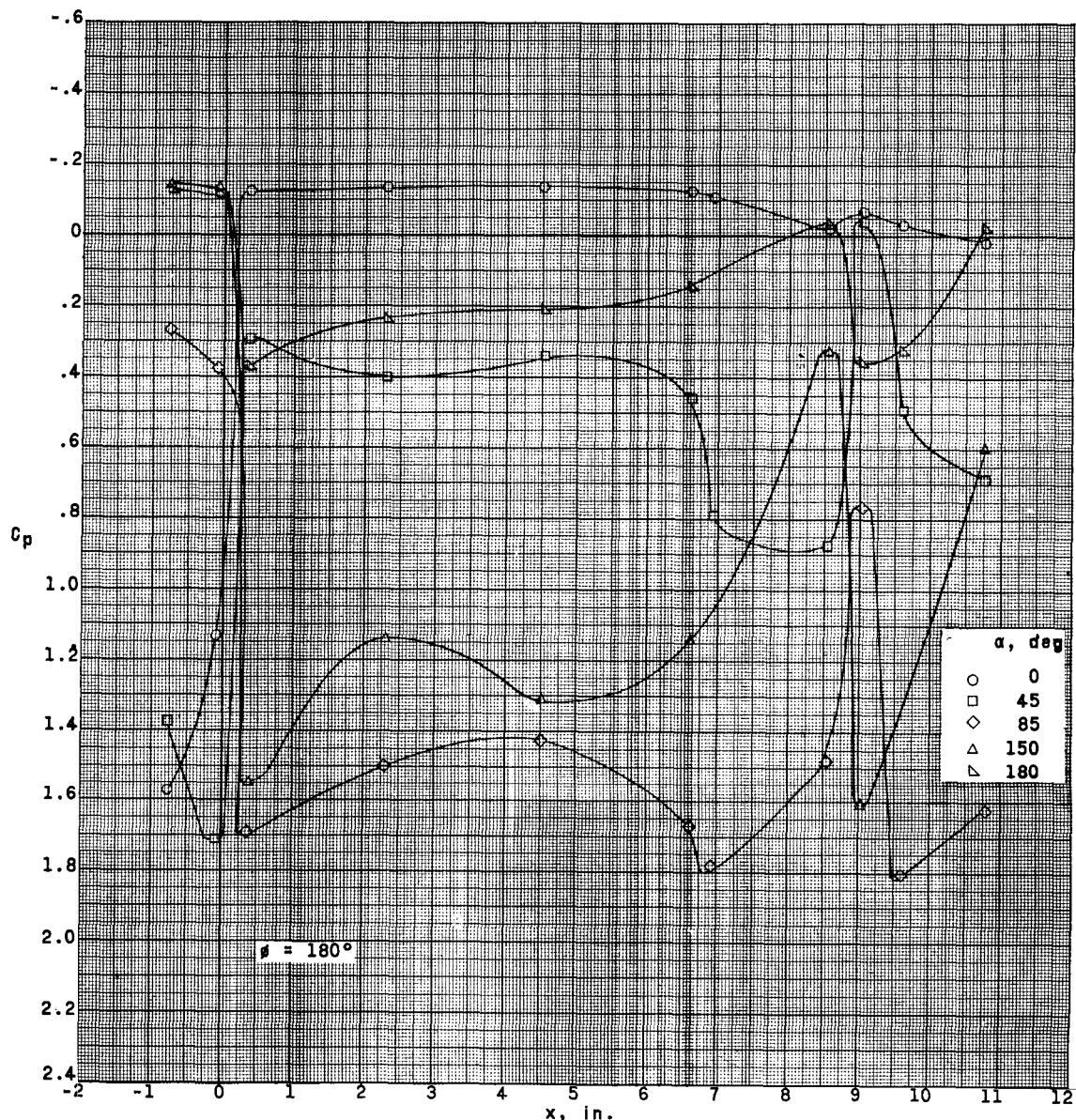
Figure 12.- Continued.

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(c) Concluded.

Figure 12.- Continued.

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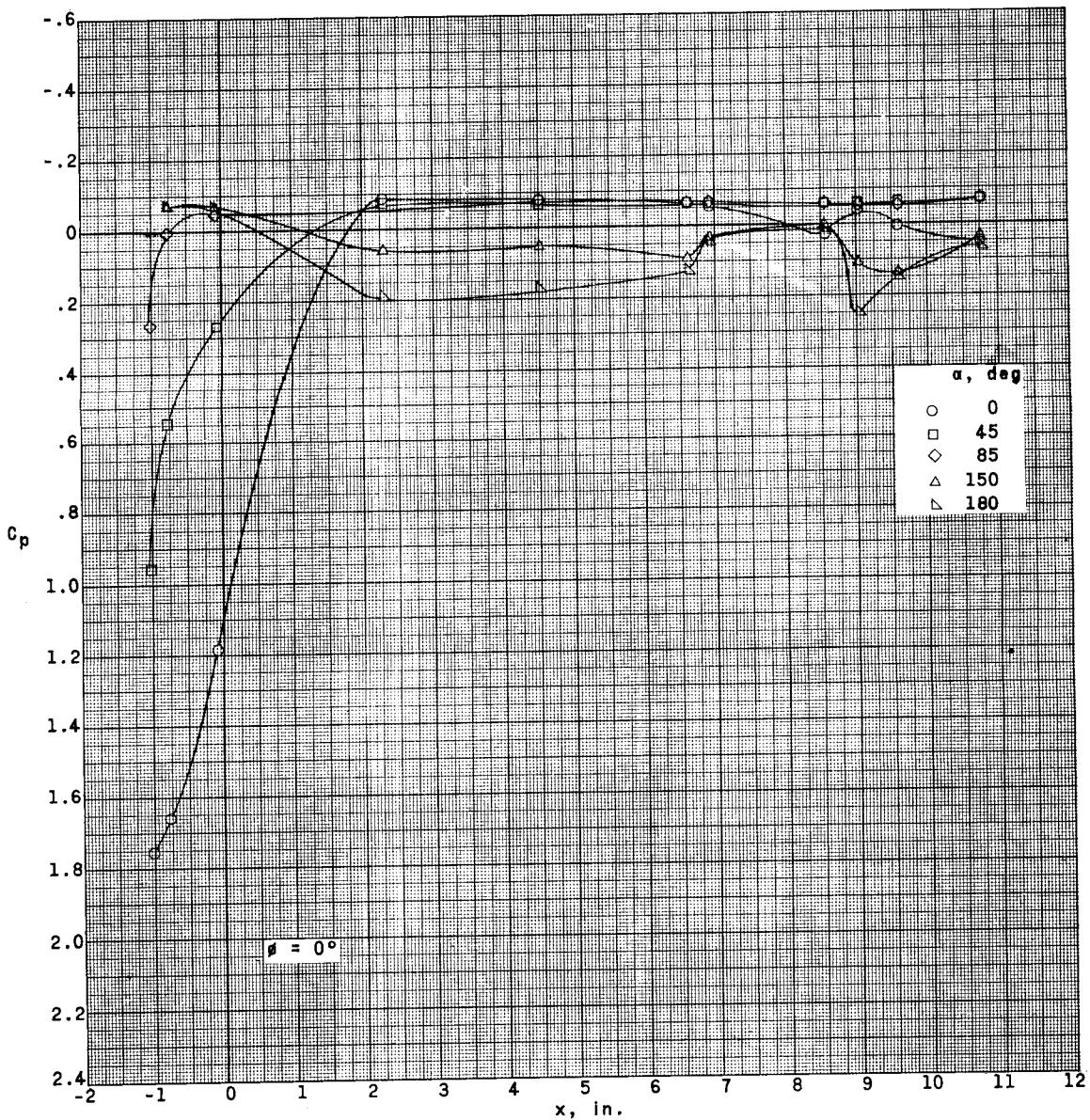
(d)  $M = 3.94$ .

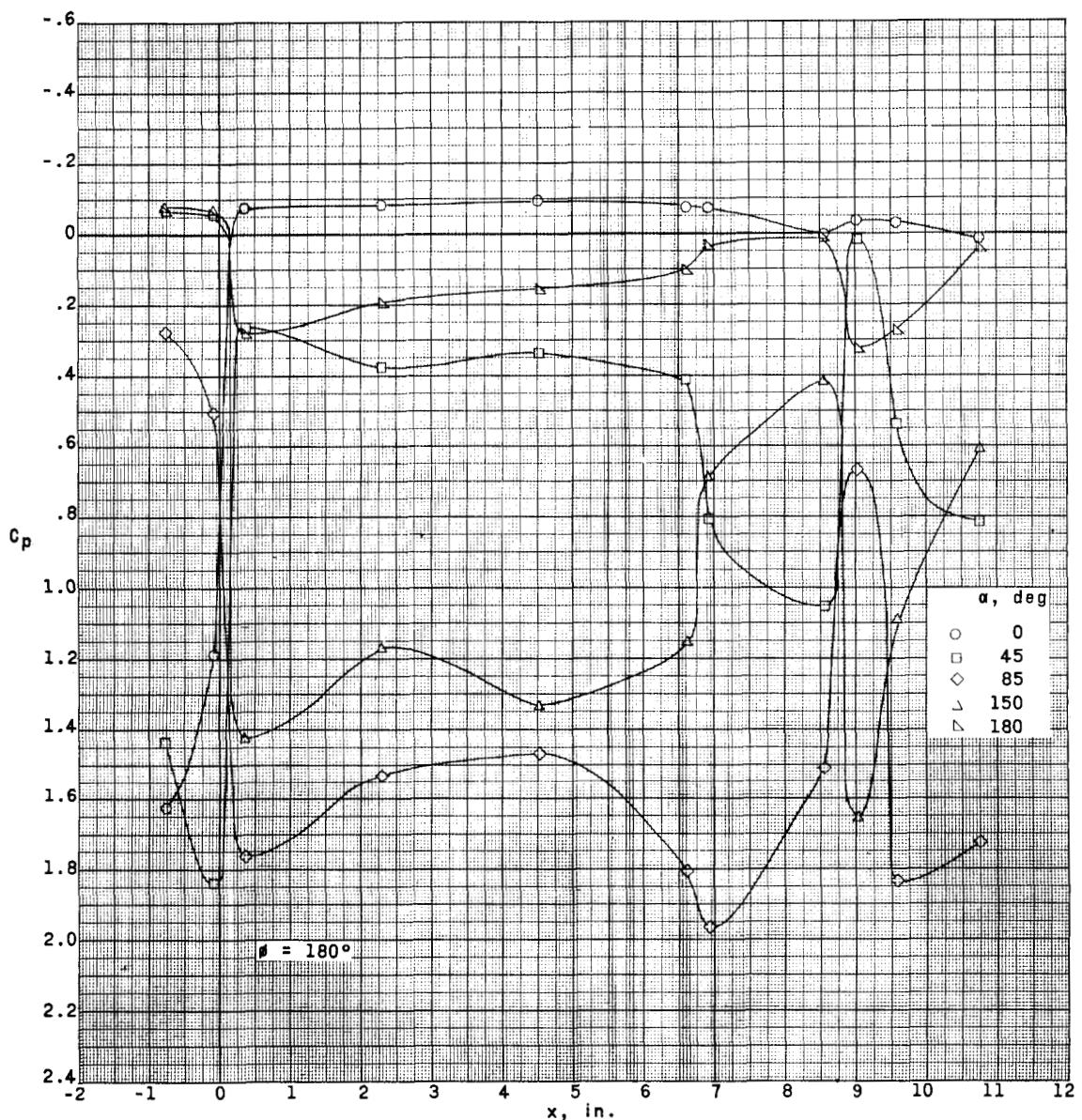
Figure 12.- Continued.

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(d) Concluded.

Figure 12.- Continued.

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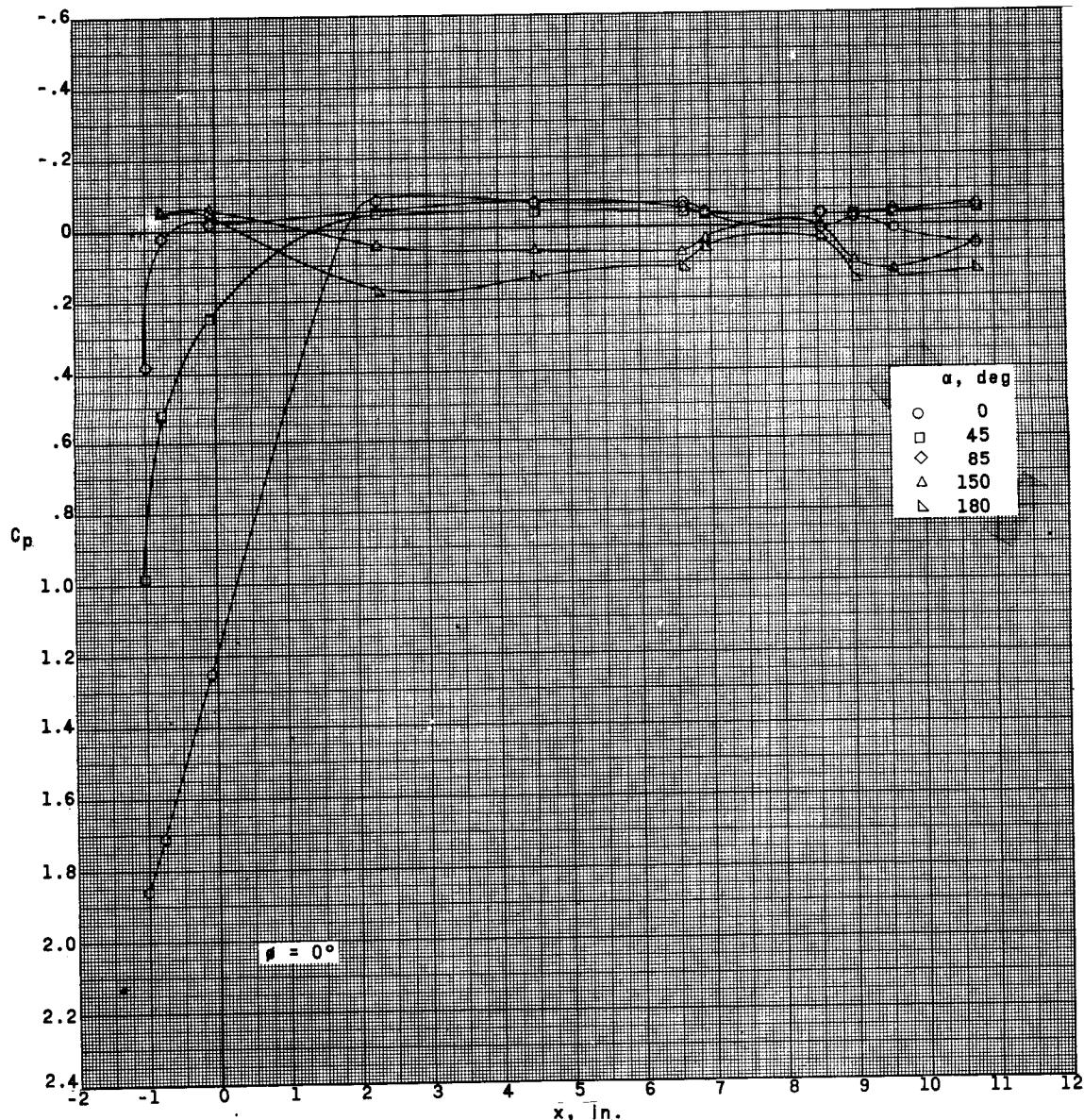
(e)  $M = 4.65$ .

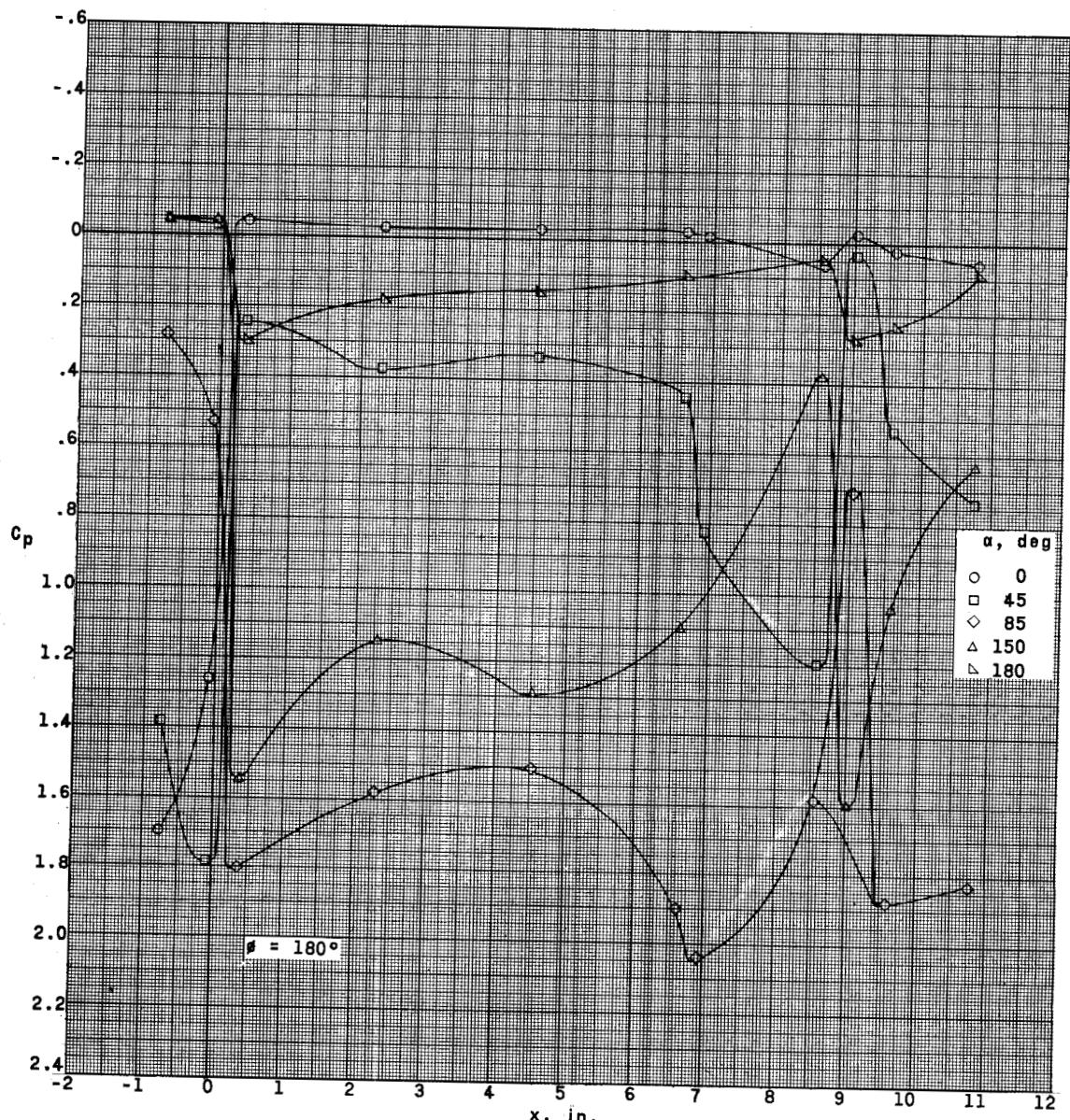
Figure 12.- Continued.

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(e) Concluded.

Figure 12.- Concluded.

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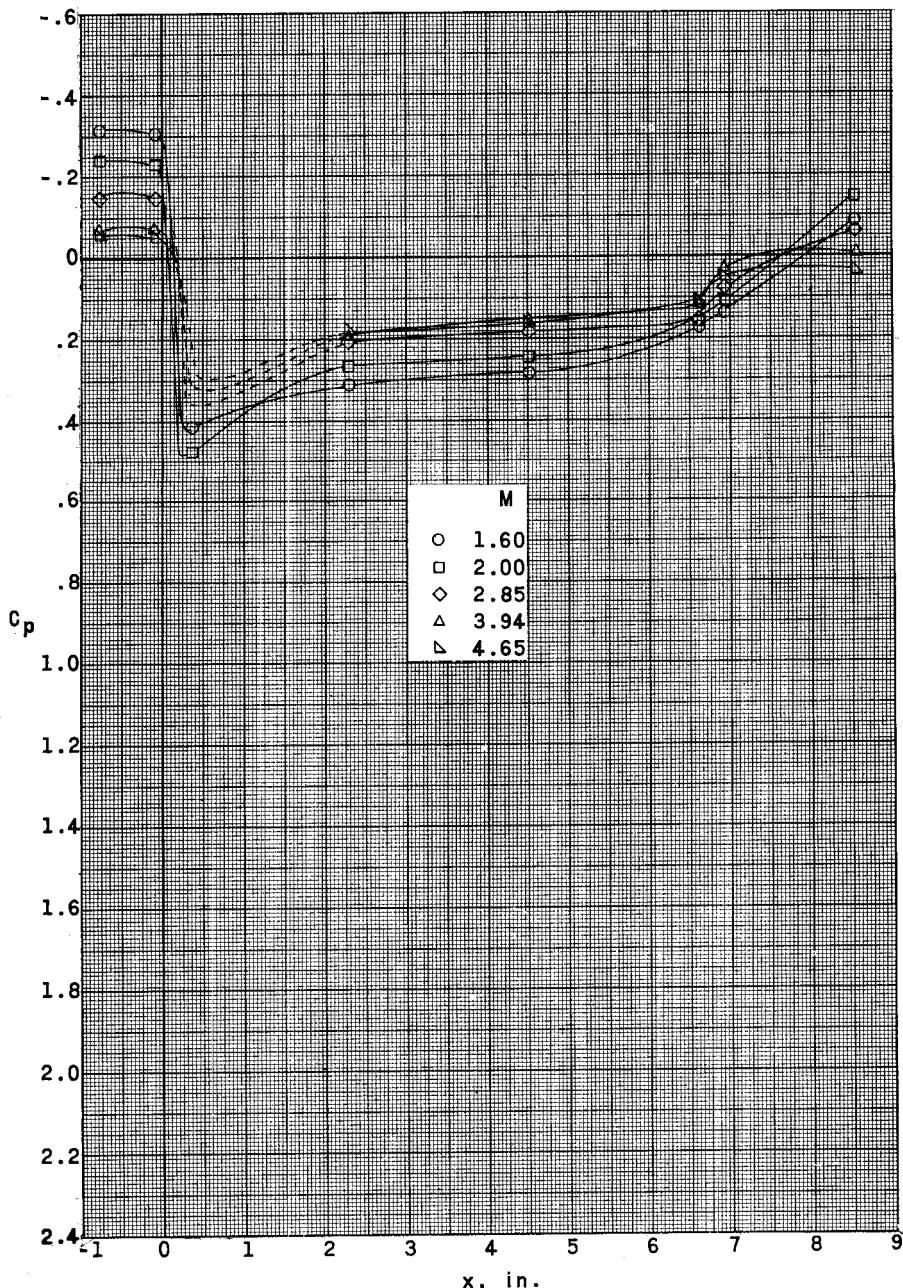
(a)  $\varphi = 0^\circ$ .

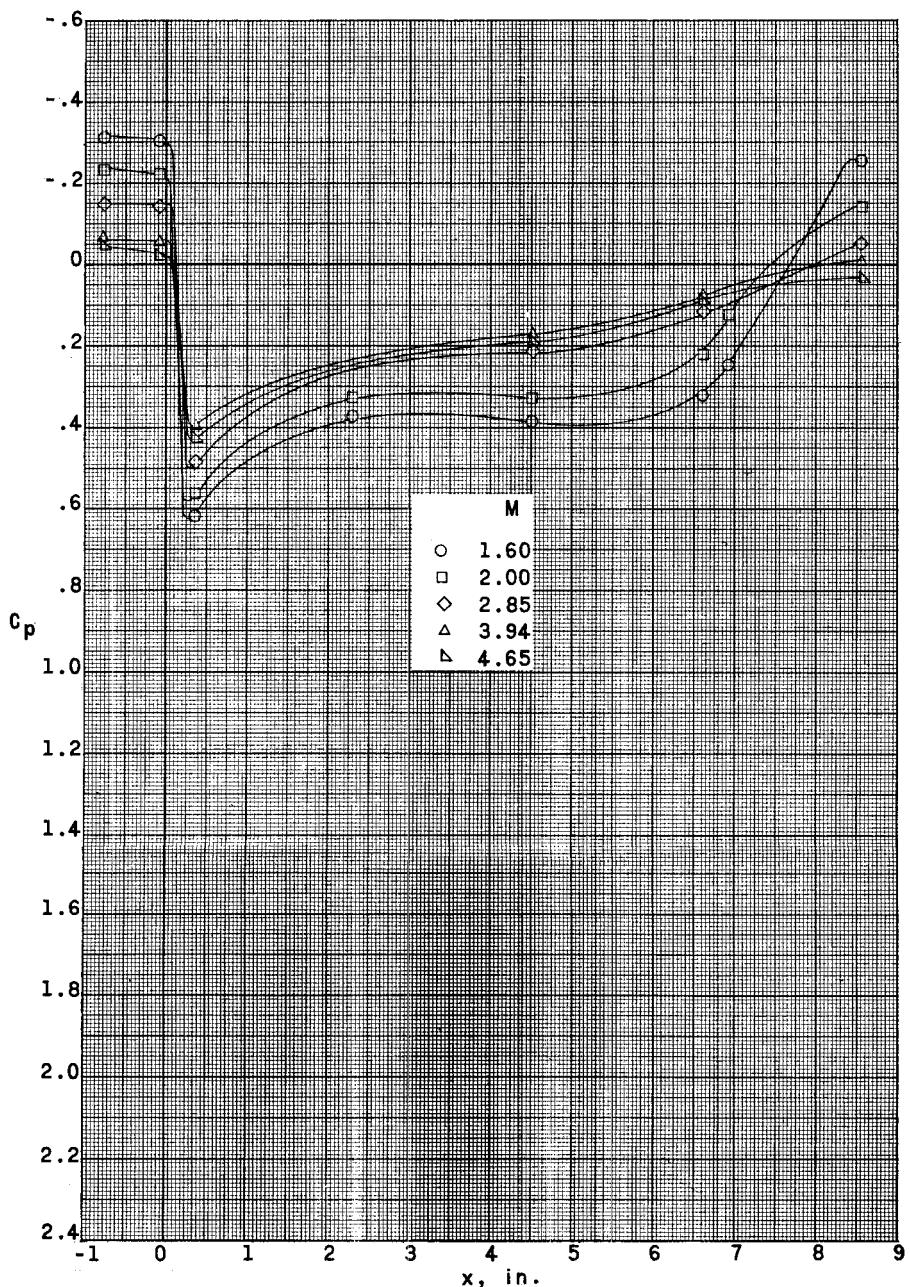
Figure 13.- Effect of Mach number on the pressure distribution on escape configuration of the 1/9-scale model at meridian angles of  $0^\circ$  and  $180^\circ$ .  $\alpha = 180^\circ$ .

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(b)  $\phi = 180^\circ$ .

Figure 13.- Concluded.

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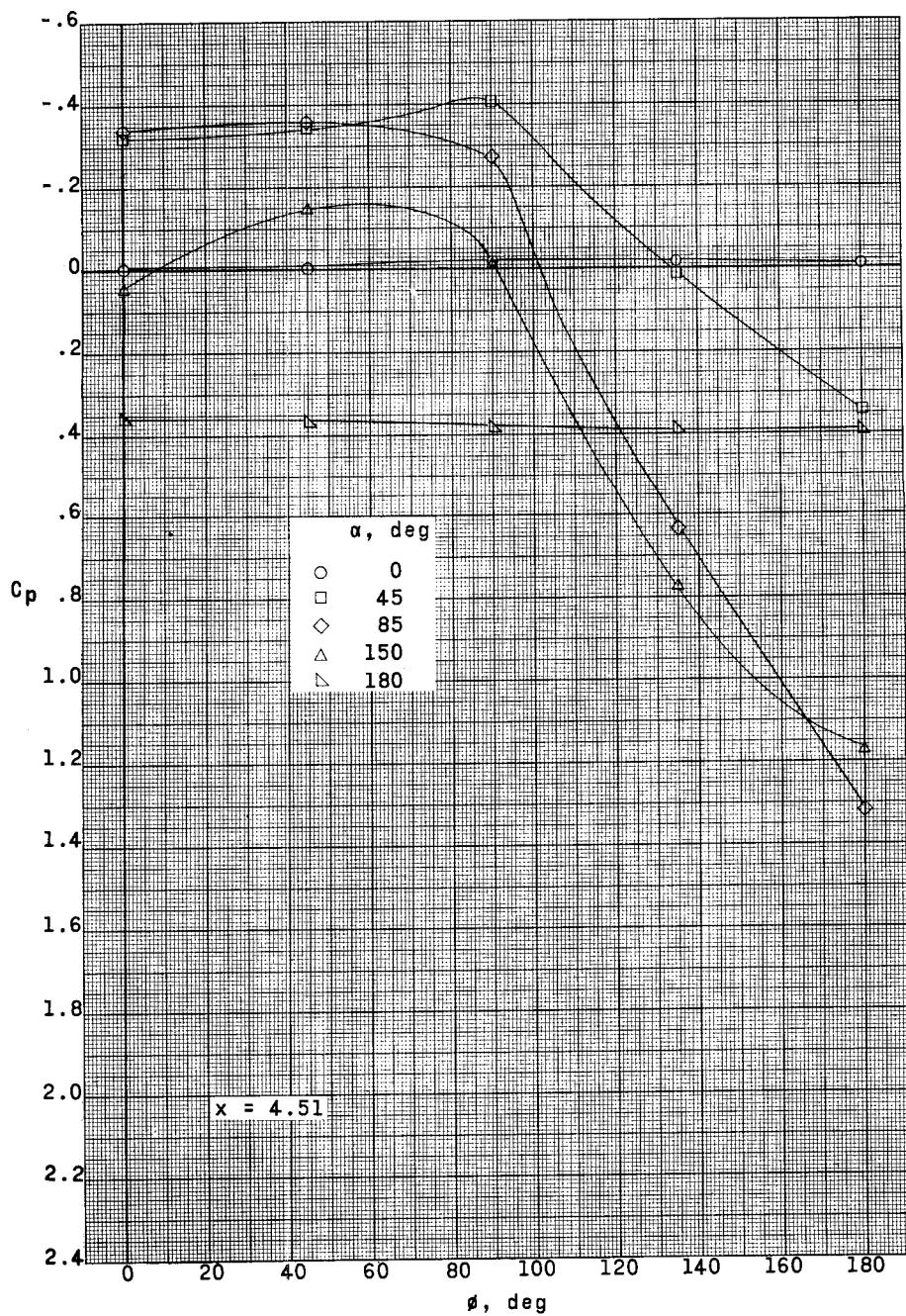
(a)  $M = 1.60.$ 

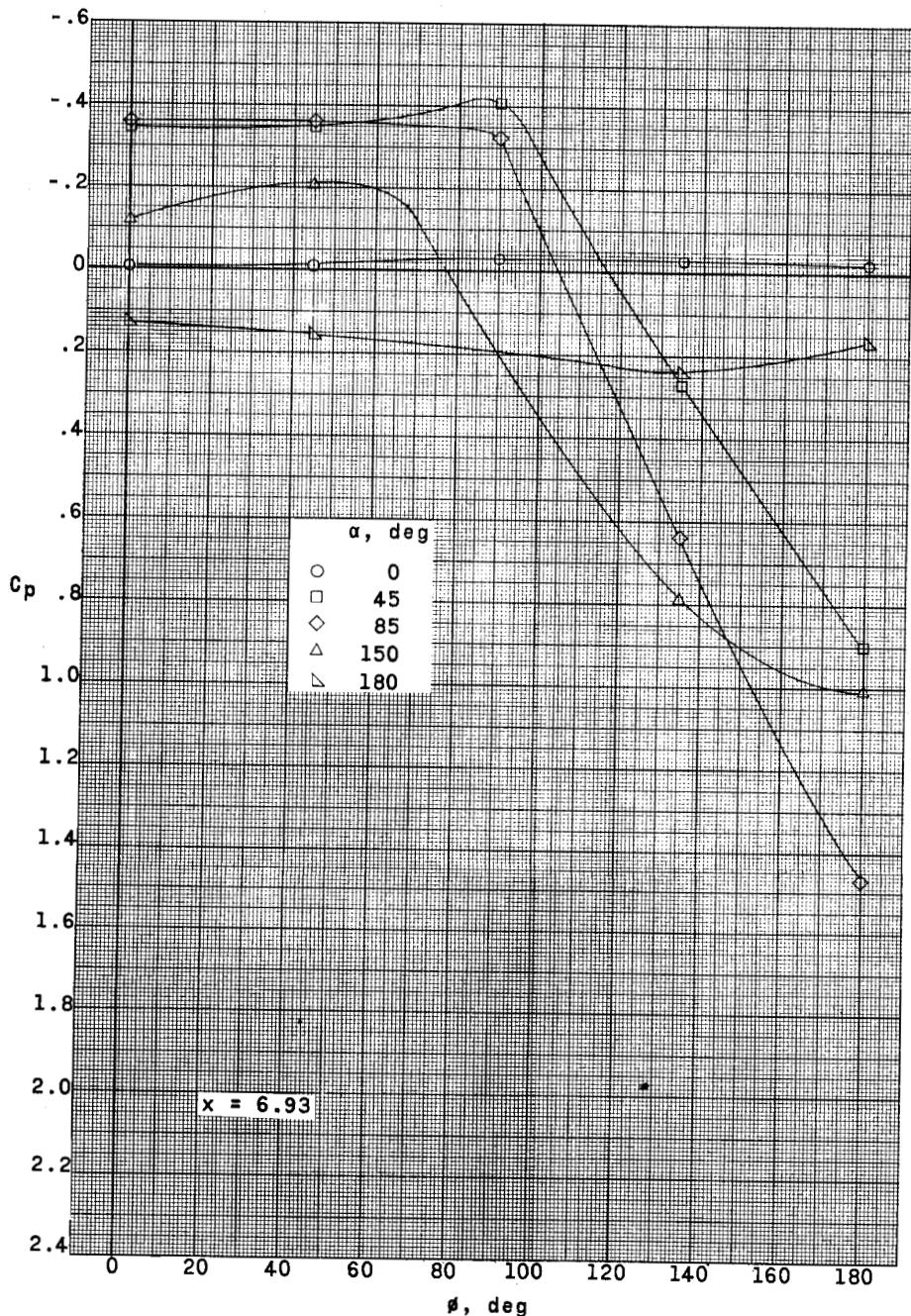
Figure 14.- Effect of angle of attack on the pressure distribution on exit and reentry configurations of the 1/9-scale model at axial stations of 4.51, 6.93, and 9.59 inches.

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(a) Continued.

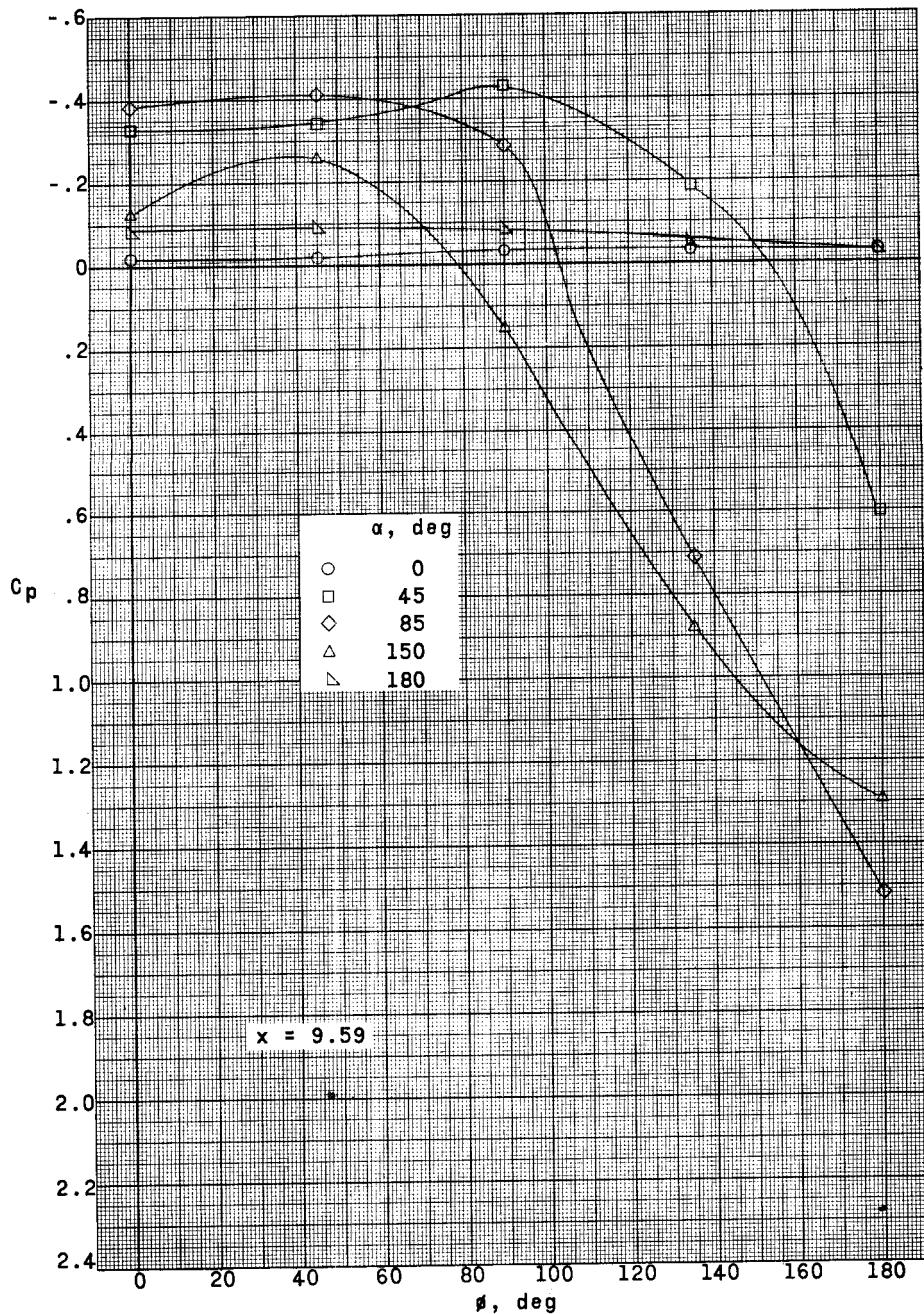
Figure 14.- Continued.

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(a) Concluded.

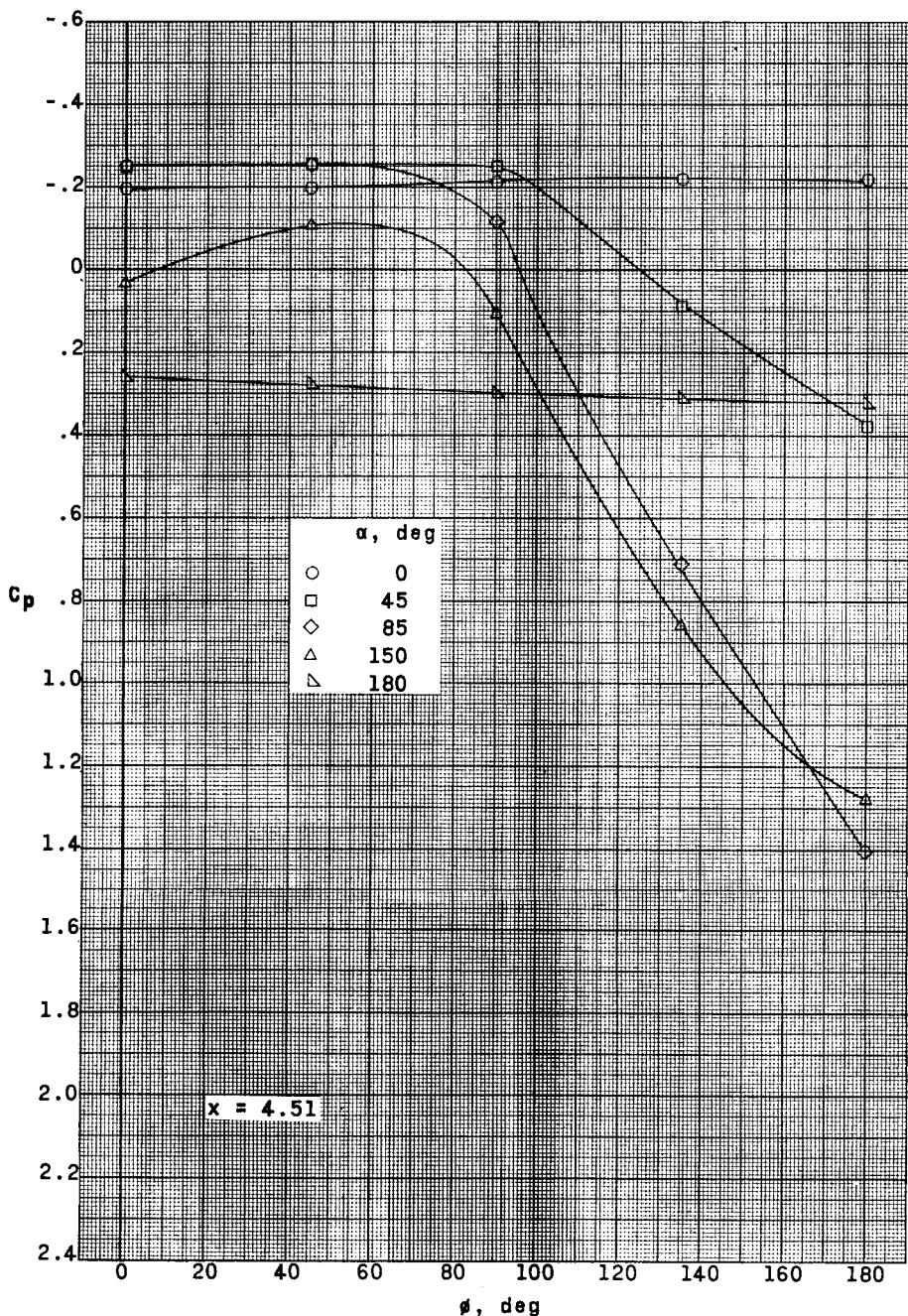
Figure 14.- Continued.

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(b)  $M = 2.00.$

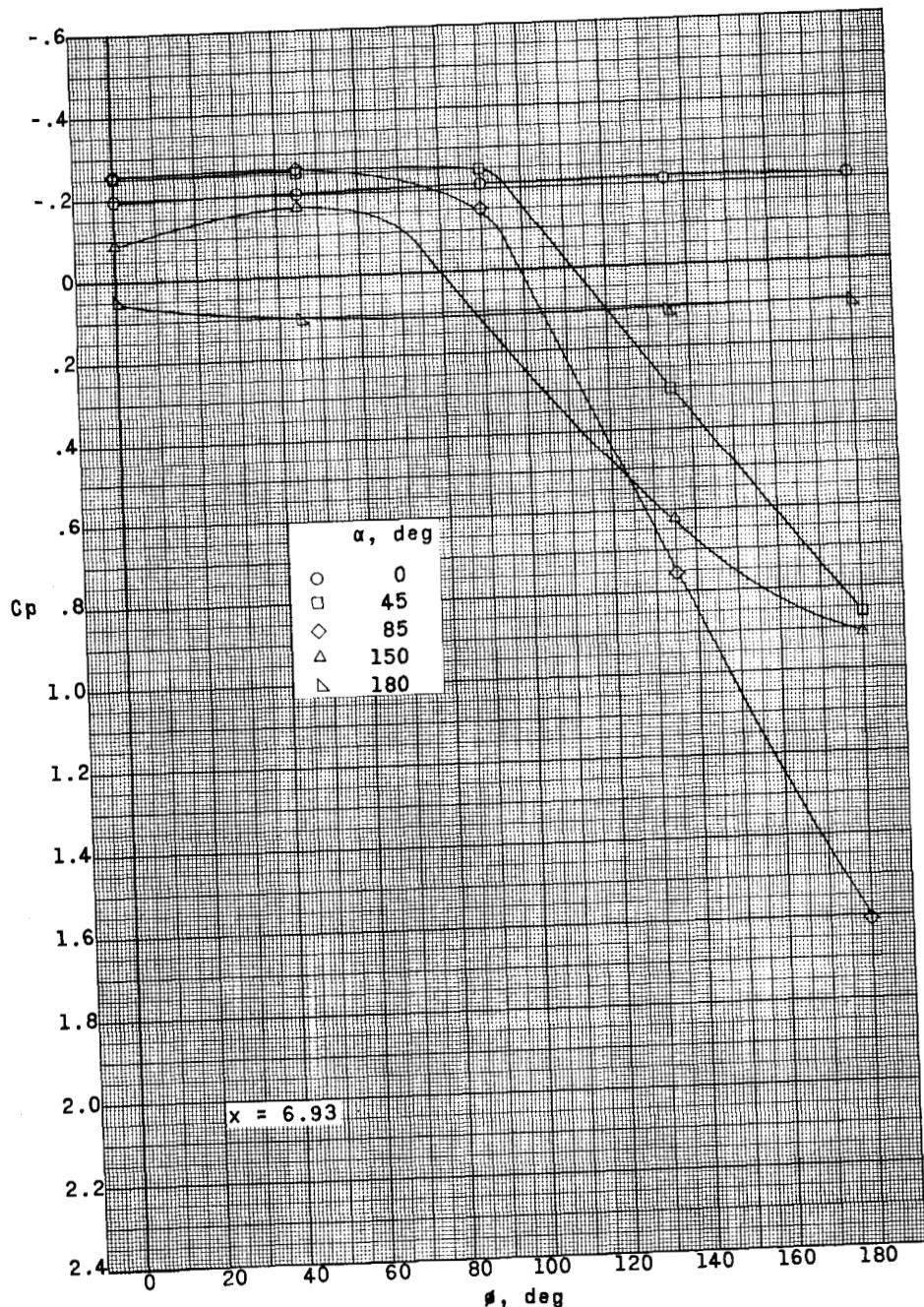
Figure 14.- Continued.

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(b) Continued.

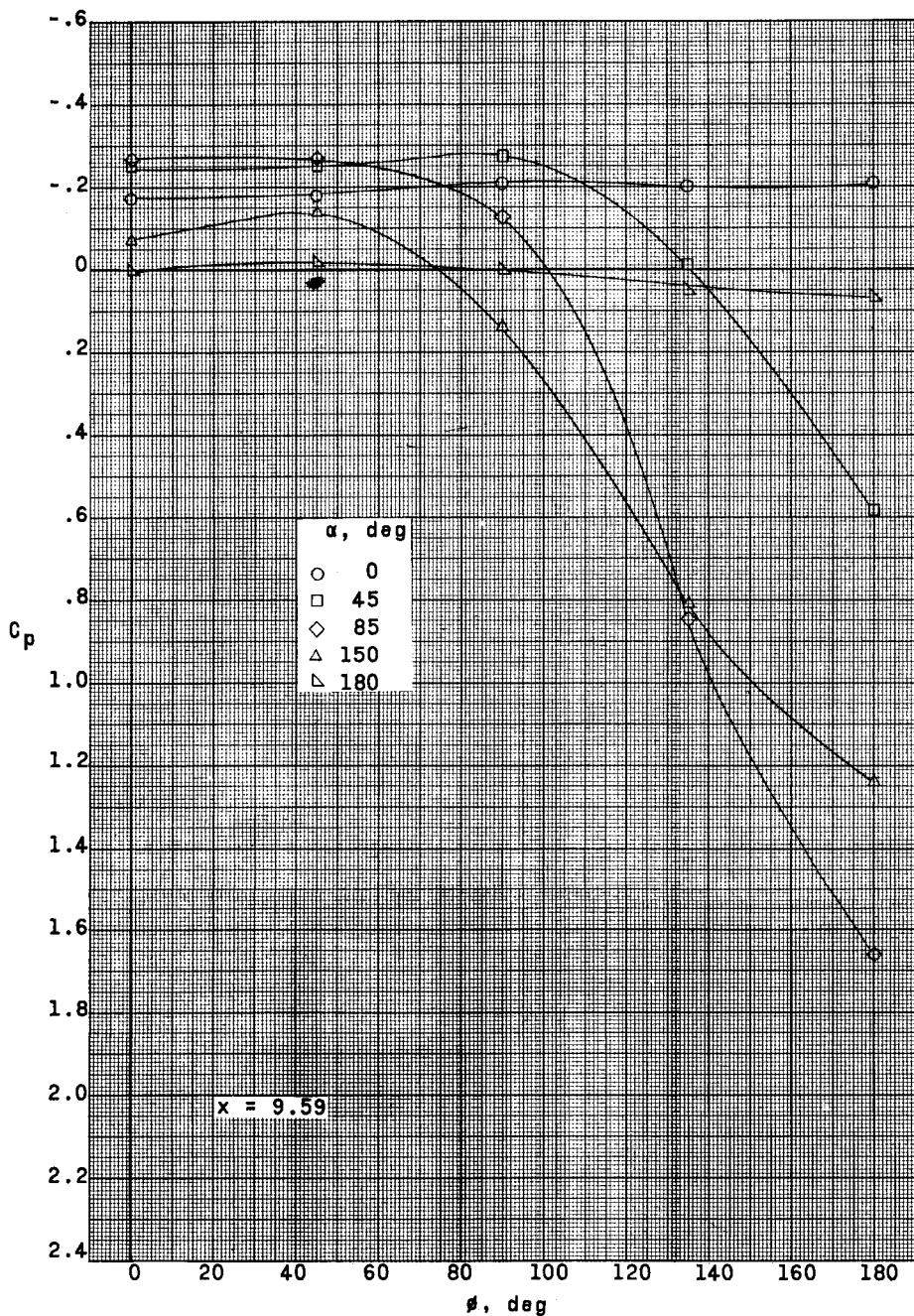
Figure 14.- Continued.

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(b) Concluded.

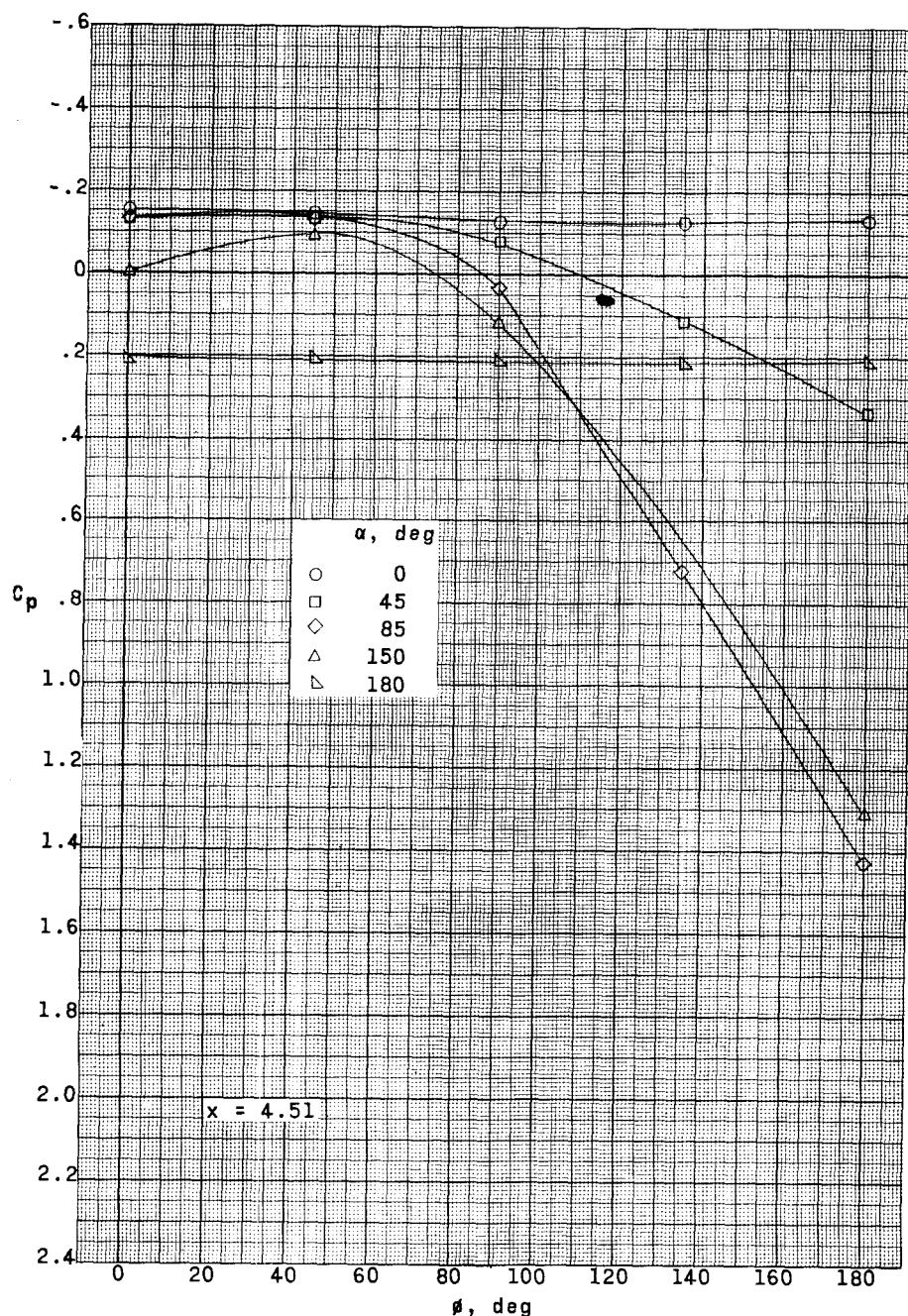
Figure 14.- Continued.

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(c)  $M = 2.85.$

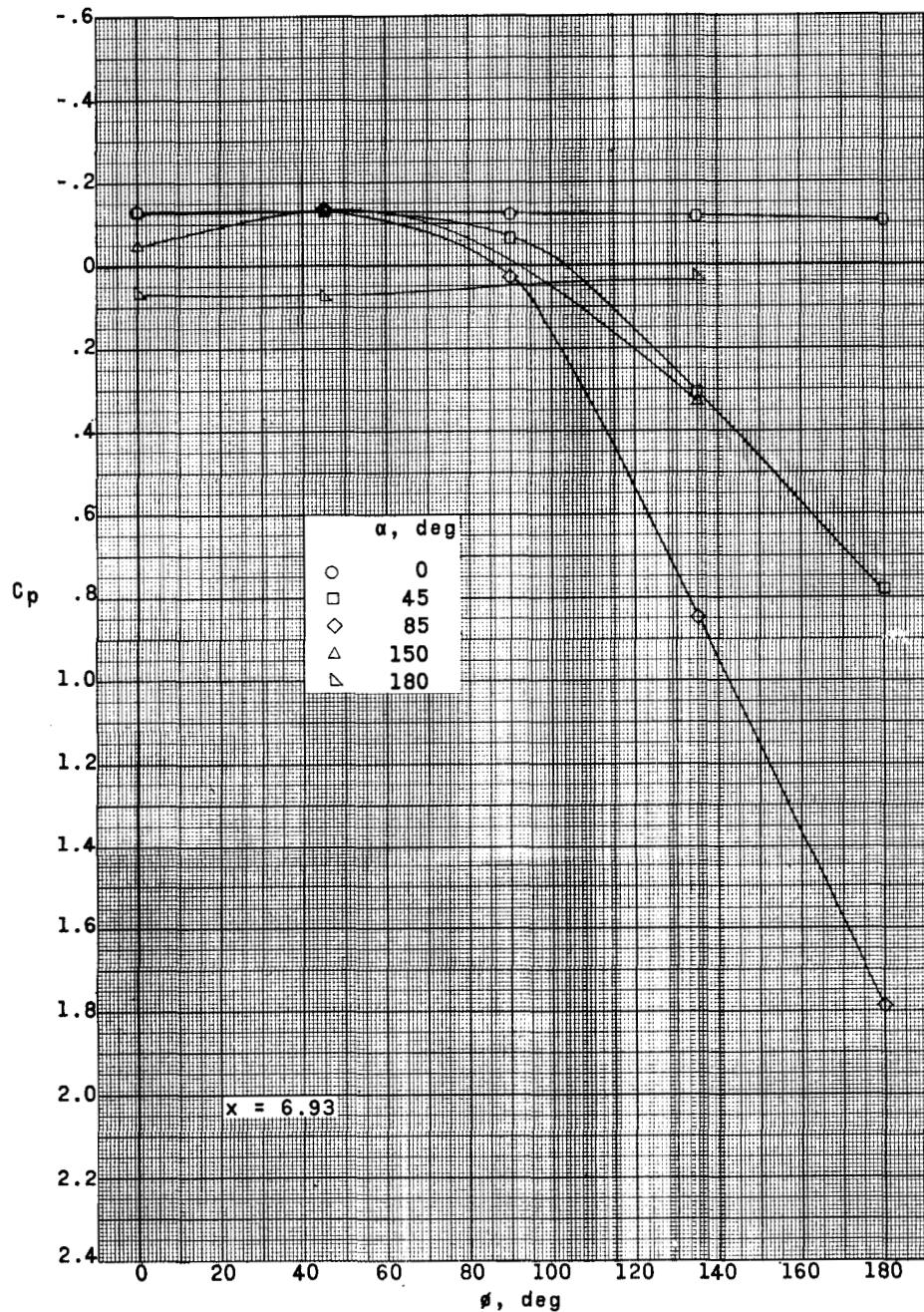
Figure 14.- Continued.

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(c) Continued.

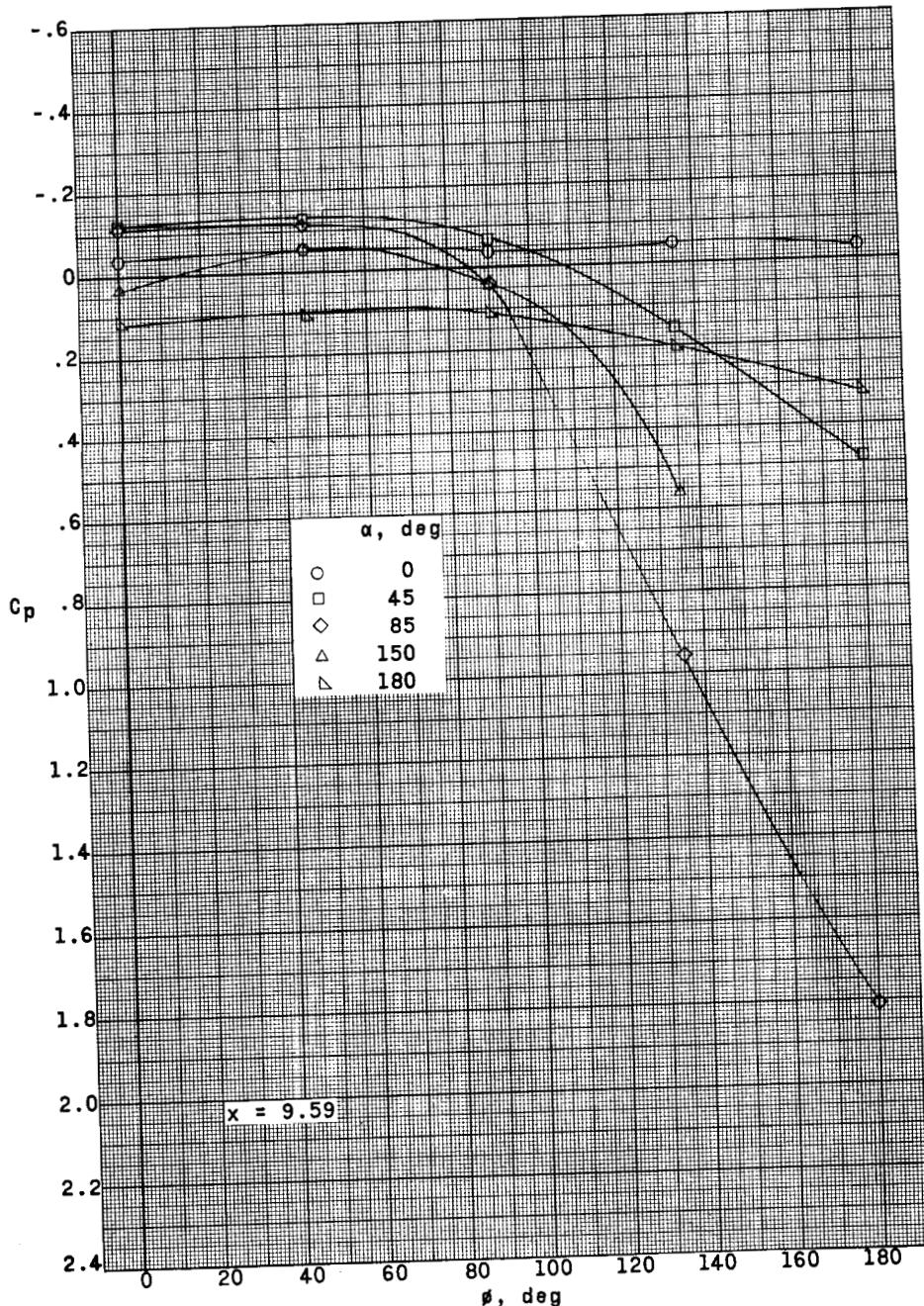
Figure 14.- Continued.

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(c) Concluded.

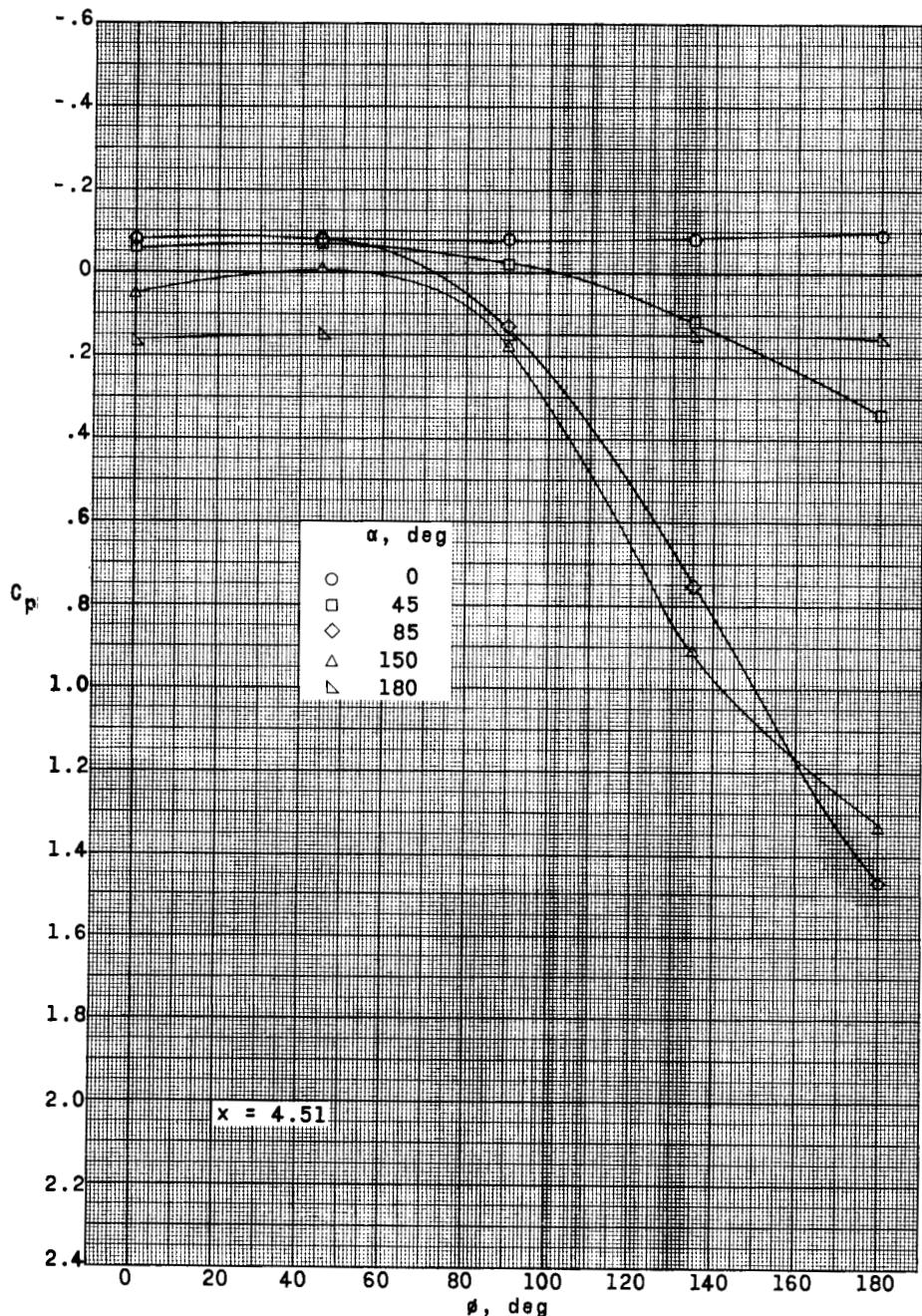
Figure 14.- Continued.

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(d)  $M = 3.94$ .

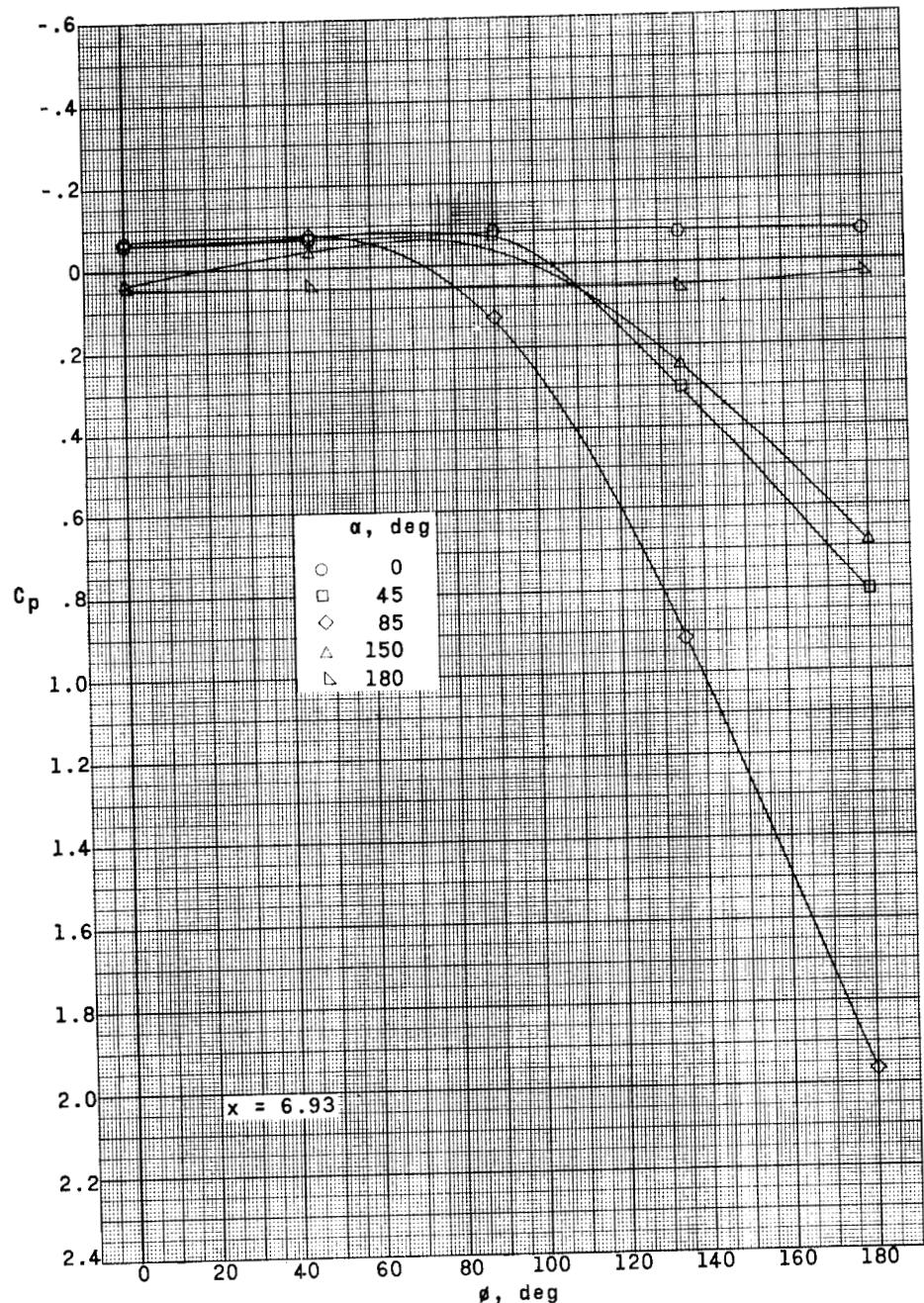
Figure 14.- Continued.

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(d) Continued.

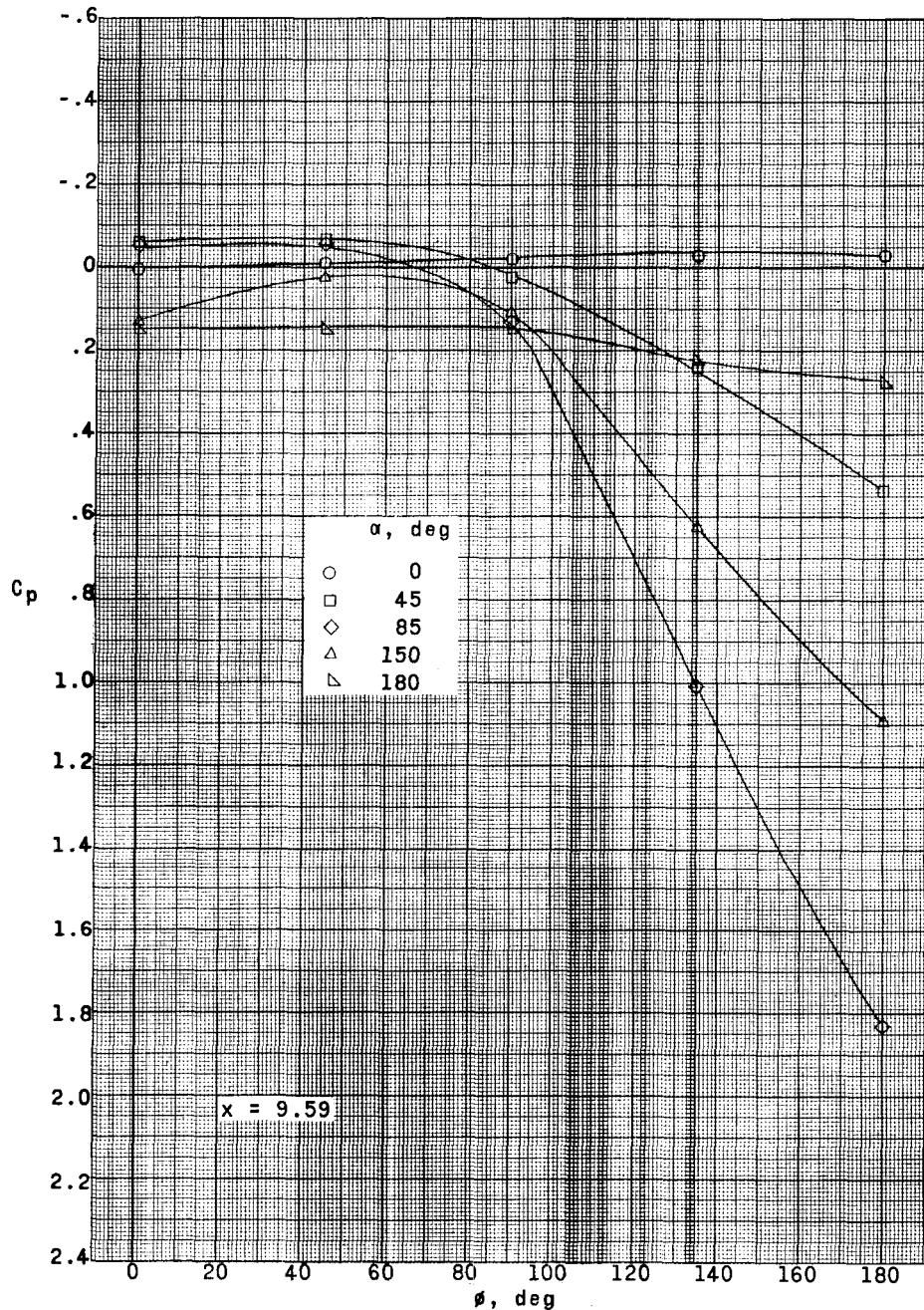
Figure 14.- Continued.

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(d) Concluded.

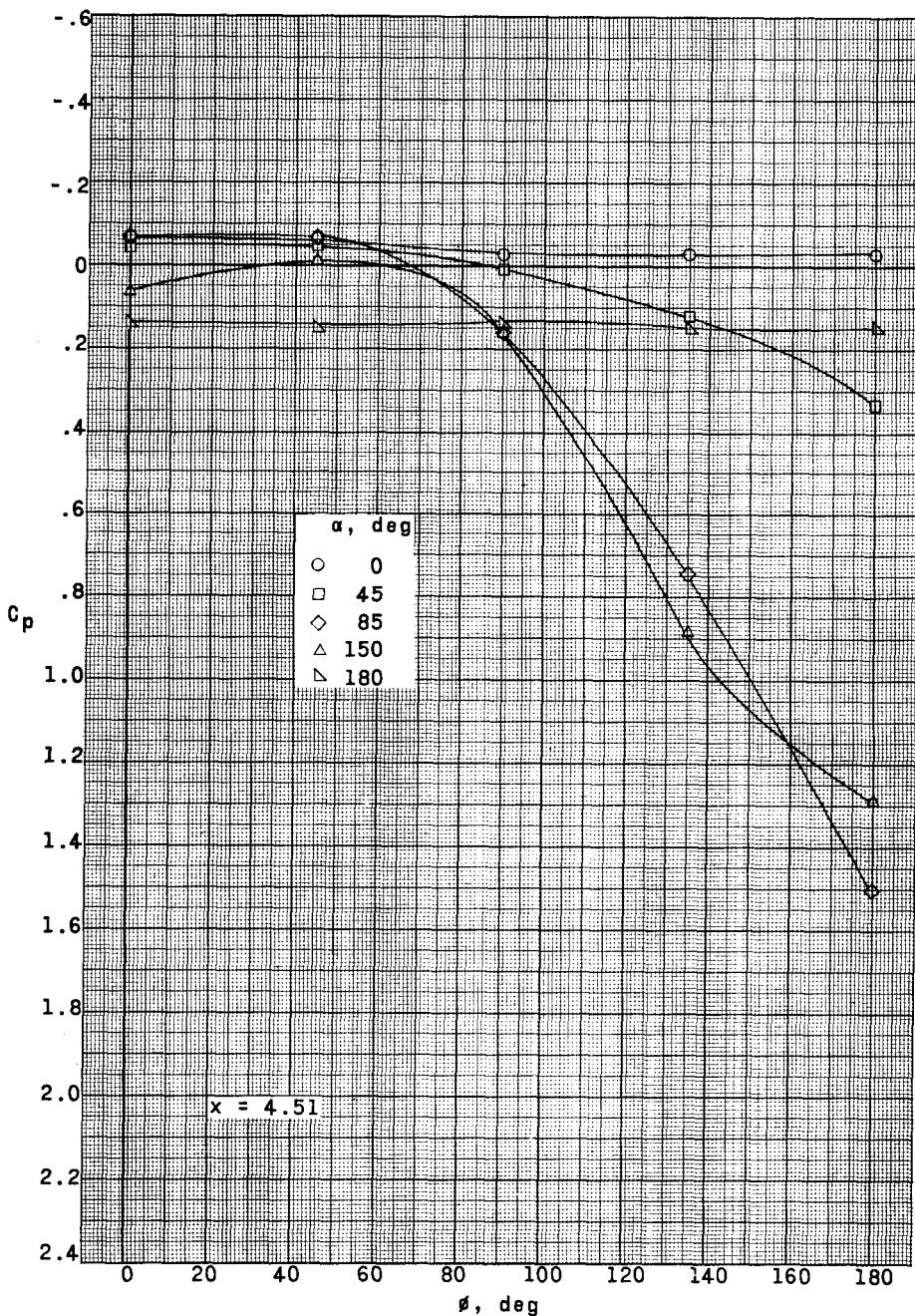
Figure 14.- Continued.

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(e)  $M = 4.65.$

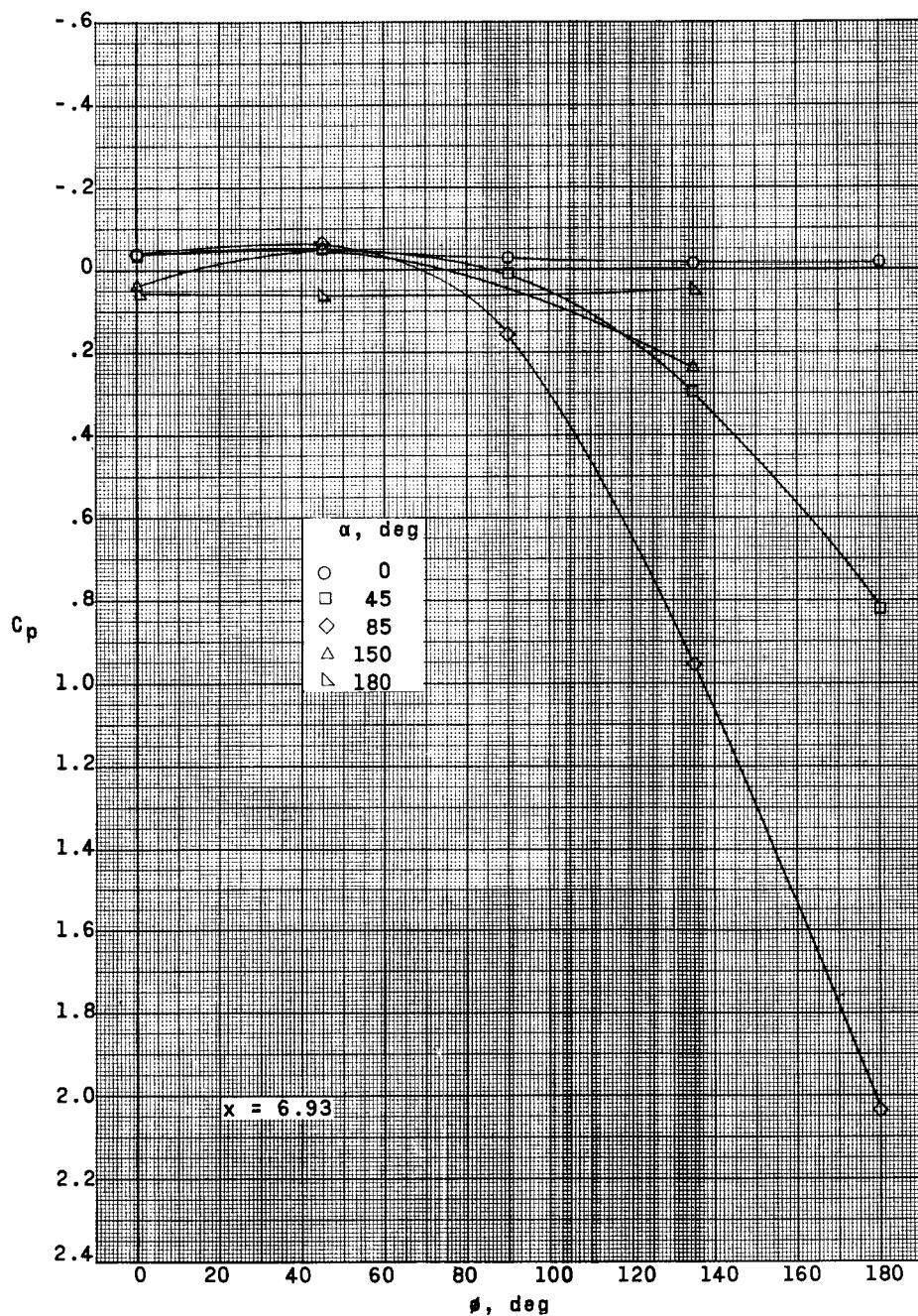
Figure 14.- Continued.

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(e) Continued.

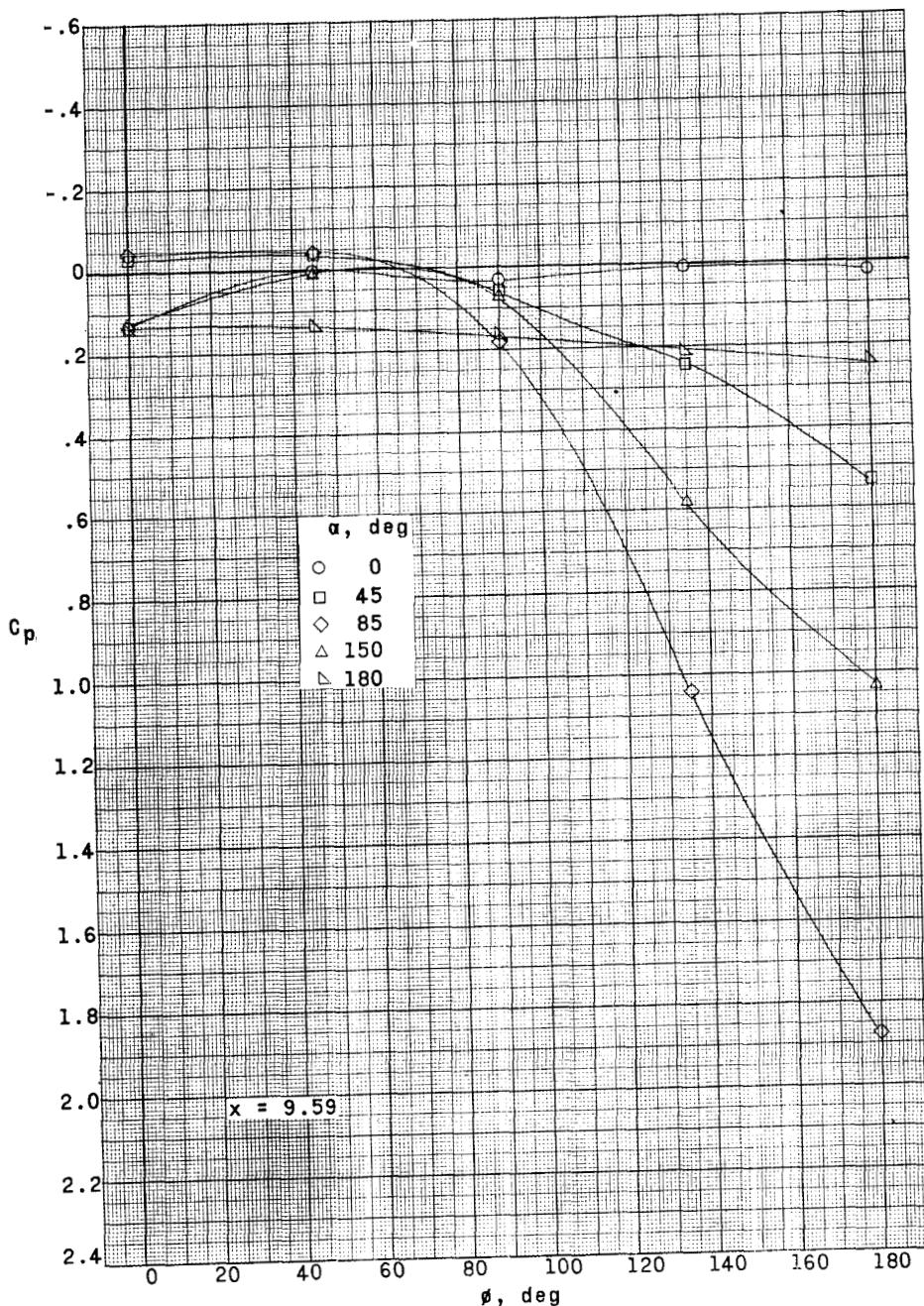
Figure 14.--Continued.

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(e) Concluded.

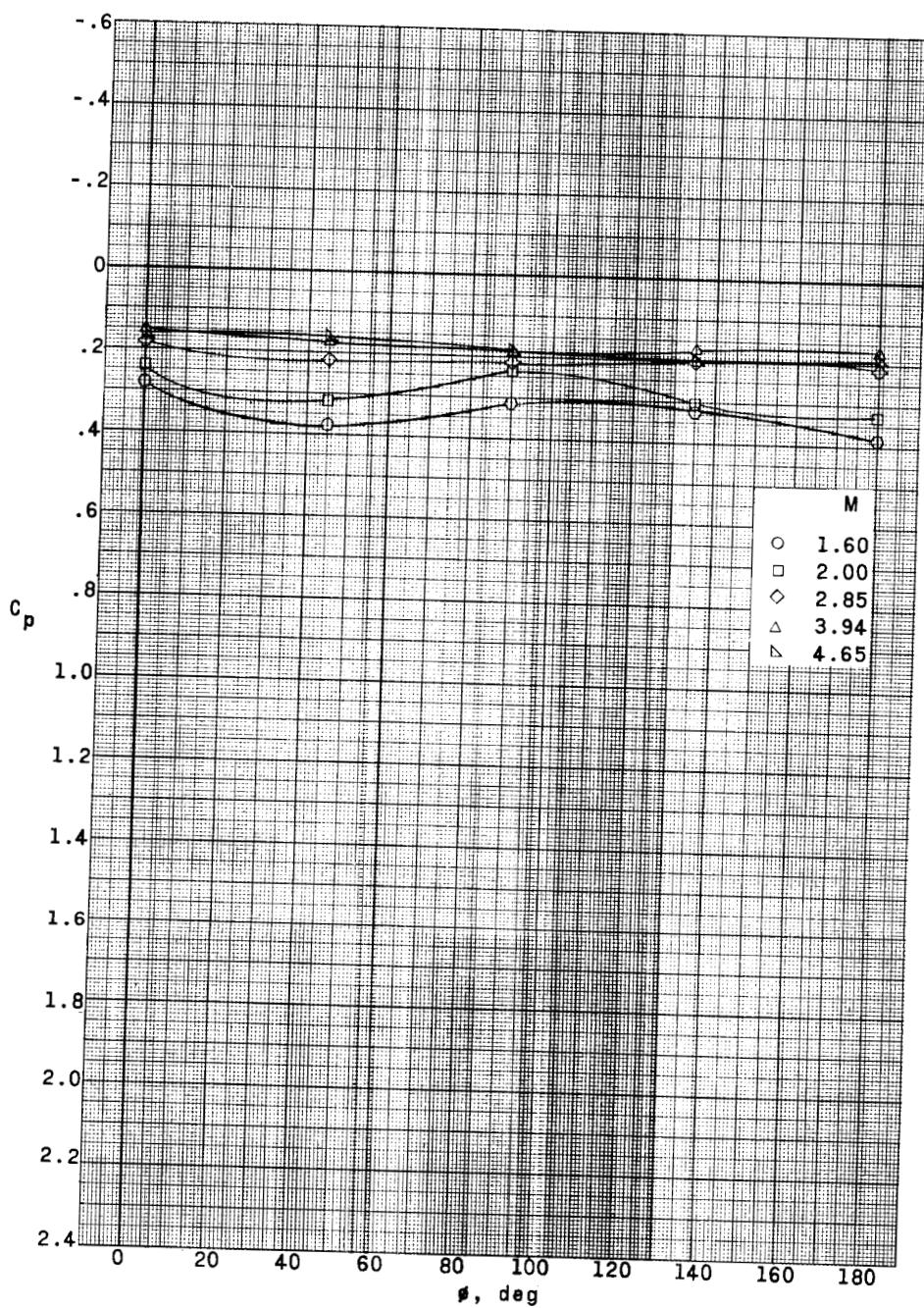
Figure 14.- Concluded.

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(a)  $x = 4.51$  inches.

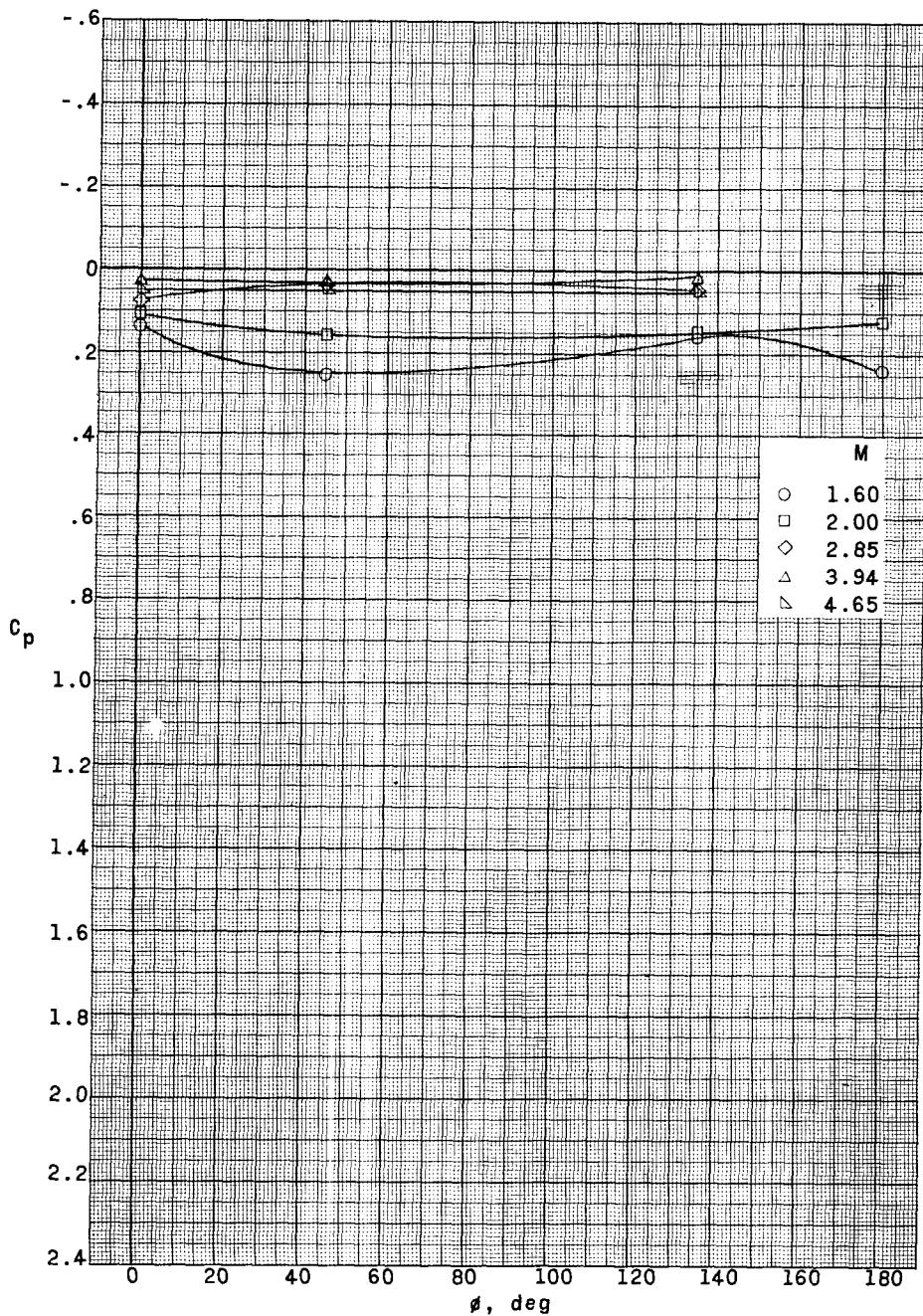
Figure 15.- Effect of Mach number on the pressure distribution on escape configuration of the 1/9-scale model at axial stations of 4.51 and 6.93 inches.  $\alpha = 180^\circ$ .

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(b)  $x = 6.93$  inches.

Figure 15.- Concluded.

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